I H C ALMANAC AN ENCYCLOPEDIA FOR 1912

Astronomical Calculations

By BERLIN H. WRIGHT, De Land, Florida

Eras of Time

The Gregorian year 1912 corresponds to the following eras:

The latter part of the 136th and the beginning of the 137th year of t Independence of the United States of America.

The 46th of the Dominion of Canada, beginning July 1.

The year 1330 of the Mohammedan era, beginning Dec. 22, 1911; the ye 1331 begins Dec. 11, 1912.

The year 8021 A. M. of the Greek Church, beginning Jan. 14.

The year 4809 (nearly) of the Chinese era, beginning Feb. 18.

The year 5672-73 (nearly) of the Jewish era; year 5673 begins at sunse Sept. 11.

The year 2572 of the Japanese era, beginning Feb. 18.

The year 6625 of the Julian Period.

The year 7420-21 of the Byzantine era, beginning Sept. 1.

The first day of January, 1912, is the 2,419,403d day since the commence ment of the Julian Period.

Chronological Cycles

Dominical Letters	G.F.	Roman Indiction	10
Epact (Moon's Age, Jan. 1)	11	Dionysian Period	24
Lunar Cycle (Golden Number)	13	Jewish Lunar Cycle	10
Solar Cycle	17		

Explanation of the Calendar Pages

All the calculations are based upon mean or clock time, except the Moon's Phases, which are of that standard within which zone the provinces named are located. The Sun's rising and setting are for the upper limb, corrected for parallax and refraction. In the case of the Moon no correction is needed, as in the Sun, for "parallax and refraction" with her are of opposite nature and just balance each other. The figures given, therefore, are for the Moon's center on a true horizon, such as the ocean or a large plain affords.

The calculations in each of the geographical divisions of each calendar page will apply with sufficient accuracy to all places in the contiguous North American zones indicated by the headings of the divisions.

Although the 24-hour system of reckoning is used on some of the Canadian railways in order to reduce the chance of error in running trains, it has not been generally adopted.

Explanation of Standard Time Chart

he heavy dotted lines show the arbitrary divisions of time in the United s. The plus and minus marks on either side of the meridian lines show her it is necessary to add to or subtract from the mean time of points or west of these lines to arrive at actual standard time. Examples: York City is 1° east of the 5th meridian, therefore New York local time, 4 m. gives standard time, and for Boston standard (eastern) time 16 m. t be subtracted from mean time; Ottawa, longitude 75° 42′ equals 42′ west 5th meridian—therefore add 3 m. for standard time.

Explanation of Signs on Calendar Pages

The signs used are as follows; ☌, conjunction or near approach; ☍, opposi- or 180° from the Sun; □, quadrature or 90° from the Sun; ☉, Sun; ⊕, th; ☿, Mercury; ♀, Venus; ♂, Mars; ♃, Jupiter; ♄, Saturn; ♅, Uranus; Neptune; ☊, Ascending Node; ☋, Descending Node; ☽, Moon generally.

How to Foretell the Weather

All storms are progressive, i. e., the entire storm area moves. This ɔtion is in a general easterly direction except in the tropical storms, hich generally pass northward along the Atlantic seaboard.

The following formula of popular weather signs was adopted, a number years ago, by the Farmers' Club of the American Institute. When the nperature falls suddenly, there is a storm east of you. When the tempera- re rises suddenly, there is a storm to the west or northwest of you. The wind ways blows from a region of fair weather toward a region where a storm is rming. Cirrus clouds always move from a region where a storm is in progress ward a region of fair weather. Cumulus clouds always move from a region here a storm is forming. When cirrus clouds are moving rapidly from the orth or northeast there will be rain within twenty-four hours no matter how ɔld it is. When cirrus clouds are moving rapidly from the south or southeast here will be a cold hailstorm on the morrow if it be in the summer, and if it be n the winter there will be a snow storm. Whenever heavy white frost occurs, storm is forming within 1,000 miles north or northwest of you.

The wind always blows spirally around a storm center, in a direction contrary to the hands of a clock, and generally toward the storm center. When it blows from the north the heaviest rain is east of you; if from he south the heaviest rain is west of you; if from the east the heaviest rain s south of you.

Weather Forecasts and Signals

The operations of the weather bureau of the Department of Agriculture are based upon observations of the weather taken at about 200 observatories throughout the United States at the same moment of time and telegraphed daily to Washington, D. C., and to other important cities. These observations comprising barometric pressure, temperature, precipitation, wind, and clouds, are entered upon outline charts of the United States by means of symbols, forming the "daily weather map," from which the forecasts are made. These forecasts are issued every day for every state in the union, and whenever necessary special warnings are sent out of storms, frosts, cold waves, heavy snows, and floods. In addition to the main office in Washington there are subordinate forecast centers in Chicago, New Orleans, Denver, San Francisco, and Portland, Ore. The forecasts are first telegraphed to about 2,300 principal distributing points, whence they are further disseminated by telegraph, telephone, and the mails. It is estimated that the total number of persons in the United States to whom the weather forecasts are directly available is more than 4,000,000.

Anniversaries, Church Days, and Festivals

New Year's Day (Circumcision)	Jan.	1	Nativity of John the Baptist	June	24
Epiphany	"	6	Peter and Paul	"	29
Lee's Birthday	"	19	Independence Day	July	4
Conversion of St. Paul	"	25	Mary Magdalen	"	22
Purification of B. V. M.	Feb.	2	St. James	"	25
Septuagesima Sunday	"	4	Transfiguration	Aug.	6
Sexagesima Sunday	"	11	Feast of Assumption B. V. M.	"	15
Lincoln's Birthday	"	12	St. Bartholomew	"	24
St. Valentine	"	14	Labor Day (exc. in certain states)	Sept.	2
Quinquagesima (Shrove) Sunday	"	13	Exaltation of Holy Cross	"	14
Shrove Tuesday	"	20	St. Matthew	"	21
Ash Wednesday	"	21	Day of Atonement (Yom-Kippur)	"	21
Washington's Birthday	"	22	First Day of Tabernacles	"	26
Quadragesima Sunday	"	25	Michaelmas	"	29
St. Patrick's Day (Mid-Lent Sun.)	Mch.	17	St. Luke	Oct.	18
Annunciation (Lady Day)	"	25	Simon and Jude	"	28
Palm Sunday	"	31	Halloween	"	31
First Day of Passover	Apr.	2	All Saints	Nov.	1
Good Friday	"	5	All Souls	"	2
Easter Sunday	"	7	General Election (exc. in certain states)	"	5
Low Sunday	"	14	Thanksgiving Day	"	28
St. George	"	23	St. Andrew	"	30
St. Mark	"	25	Advent Sunday	Dec.	1
Philip and James	May	1	Feast of Immaculate Conception B. V. M.	"	8
Rogation Sunday	"	12	St. Thomas	"	21
Ascension (Holy) Thursday	"	16	Christmas Day	"	25
Hebrew Pentecost (Shebuoth)	"	22	St. Stephen	"	26
Pentecost (Whitsunday)	"	23	St. John the Evangelist	"	27
Memorial Day (exc. in certain states)	"	30	Holy Innocents	"	28
Trinity Sunday	June	2			
Corpus Christi	"	6			

Ember Days

Wednesday, Friday and Saturday after 1st Sunday in Lent—Feb. 28 and March 1 and 2.
Wednesday, Friday and Saturday after Pentecost—May 29, 31 and June 1.
Wednesday, Friday and Saturday after 14th of September—September 18, 20 and 21.
Wednesday, Friday and Saturday after 13th of December—December 18, 20 and 21.

The Seasons and the Sun's Apparent Path Through the Zodiac

Sun Enters Sign	☉ Constellation		D.	H.	M.	Central Standard Time				D.	H.	M.
♑ =	♐		Dec. 22	4	45	p. m.,	1911.	Winter begins and lasts		89	0	44
♒ =	♑		Jan. 21	3	29	a. m.,	1912.	South of the Equator				
♓ =	♒		Feb. 19	5	56	p. m.,	1912.	South of the Equator				
♈ =	♓		Mch. 20	5	29	p. m.,	1912.	Spring begins and lasts		92	19	48
♉ =	♈		Apr. 20	5	13	a. m.,	1912.	North of the Equator.				
♊ =	♉		May 21	4	57	a. m.,	1912.	North of Equator.				
♋ =	♊		June 21	1	17	p. m.,	1912.	Summer begins and lasts		93	14	51
♌ =	♋		July 23	0	14	a. m.,	1912.	North of Equator.				
♍ =	♌		Aug. 23	7	2	a. m.,	1912.	North of the Equator.				
♎ =	♍		Sept. 23	4	8	a. m.,	1912,	Autumn begins and lasts		89	18	37
♏ =	♎		Oct. 23	0	50	p. m.,	1912.	South of Equator.				
♐ =	♏		Nov. 22	9	48	a. m.,	1912.	South of the Equator.				
♑ =	♐		Dec. 21	10	45	p. m.,	1912,	Winter begins, tropical year		365	6	0
D.	H.	M.				D.	H.	M.				
89	0	44				92	19	98				
89	18	37				93	14	51				
178	19	21	South of the Equator.			186	10	39	North of the Equator.			
			Subtract			178	19	21				
						7	15	18	longer north of the Equator than south of it, owing to the slower motion of the Earth (Sun's apparent motion) when at and near Aphelion.			

The Planets

Brightest, Invisible, Evening, and Morning Stars, Conjunctions and Paths Among the Stars

MERCURY (☿), BRIGHTEST, Mch. 16-24 and Nov. 20-27, an EVENING STAR, setting about 1 hr. 15 m. after the Sun. Also Jan. 6-12, Sept. 12-18 and Dec. 27-31 as a MORNING STAR, rising about 1 hr. 15 m. before the Sun. Look for him near the sunrise point of the horizon in the morning and near the sunset point in the evening. The brightest and reddest body seen near these points within these dates will very certainly be this planet. INVISIBLE at all other times.

VENUS (♀) is the most beautiful and attractive of all the planets, the one nearest to us, and yet one we know little about, not even the length of her day, owing to the dense cloud masses which surround her. She will not attain her maximum degree of brightness this year, as may be seen by a glance at the "Chart of the Visibility of the Planets." She will, however, be best seen at the beginning and close of the year. During the months of June and July she will be practically INVISIBLE, being so near the sun as to be nearly eclipsed by the overpowering light of that great luminary, besides being the farthest possible from the earth; at superior conjunction, July 5. At that time she will be on the opposite side of the Sun from the Earth and will pass from the west to the east of the Sun or from a MORNING STAR to an EVENING STAR.

Venus shows all the phases of the Moon in the different portions of her orbit, and for the same reason when one has a small telescope or good field glass it is interesting to watch their changes of appearance.

They will appear as shown in the annexed cut.

Explanation:

A —Fifteen days before superior conjunction with the Sun or about June 18, 1912.

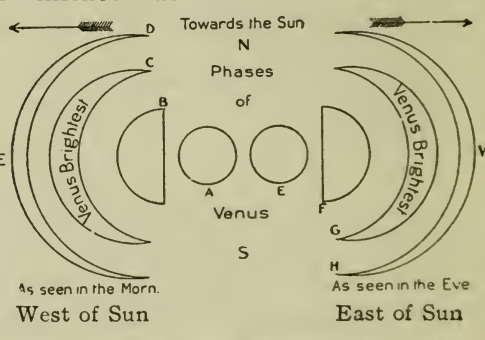
B —At greatest elongation west of the Sun Nov. 26, 1911, and July 3, 1913.

C —When brightest as a Morning Star, Oct. 21-25, 1911, and about May 25-30, 1913.

D —Just after inferior conjunction with the Sun or about April 24, 1913.

E —Fifteen days after superior conjunction with the Sun or July 15-20, 1912.

F —At greatest elongation east of the Sun or about Feb. 5-12, 1913.



G —When brightest as an Evening Star—Aug. 8-12, 1911, and March 12-18, 1913.

H —Just before inferior conjunction with the Sun or Sept. 10, 1911, and April 15-24, 1913.

Venus' place at the beginning of the year will be in ♎, near the eastern margin of the four-sided figure known as the Square of Libra, consisting of four of the brightest stars of that constellation. She will be moving eastward or advancing past the stars and on Jan. 9 will be 5° north of Antares, the noted red star of ♏ and also 1°38′ north of ♃. Hence at this time the three bodies, ♀, ♃ and Antares will be in a straight north and south line in the eastern morning sky and the Moon will be high up toward the Meridian. Jan. 15 the Moon will overtake and pass 6° to the north of her. During the last week of January and the first of February she will be passing north of and near Milkmaid's Dipper in ♐: 6° north of ☽ Feb. 14; 39′ north of ♂ Feb. 24 in ♑, south of Job's Coffin 25°; ☌ ☽ March 16, ♀ 3°43′ north; occulted by ☽ April 15; 10′ south of ☿ April 27; 3° south of ☽ May 15 in ♈; 1°7′ north of ♄ May 27 in ♈, being 5° south of the Pleiades low in the east at dawn. Because of her nearness to the Sun no further mention will be made of her movements until Sept. 9, when she will be 30′ north of ♂ and 20° west of Spica Virginis in ♍: Very close to and north of ☽ Sept. 12; 4° north of Spica Sept. 21-23; 1°43′ south of ♃ Oct. 7, when near Alpha Librae; 2°52′ north of ☽

The Planets—Continued

Oct. 12, near where she was at the beginning of the year; 5° north of Antares in ♏ the last days of October; 3°21′ north of ☽ Nov. 11 when still in ♏ and pointed at by the three lower stars of the Milkmaid's Dipper, near which she will be Nov. 20-30; 1°36′ south of ♁ Dec. 13, when on the boundary line between ♑ and ♐. At the close of the year she will be about 10° south of the ♄ in ♒ on the equator of the heavens and near the boundary between ♒ and ♑.

Mars (♂) will not be at his brightest at any time this year but will be best seen in the early part of the year, when he will shine in both the morning and evening hours. After March 4 he will be exclusively an Evening Star, gradually drawing nearer to the sun until he will be lost in its overpowering light in October. On Nov. 4 he will pass from east to the west of the Sun and become a Morning Star, but will not get far enough away (in angular distance) from the Sun to be well seen again within the year.

At the beginning of the year Mars will be in ♈ close to and southwest of the Pleiades; occulted by ☽ Jan. 1; between the Hyades and the Pleiades Jan. 28; 1°43′ south of ☽ Feb. 25 and 2° south of ☽ March 25. Through Feb. and March to April 5 he will be advancing past the stars of ♉ and about March 25 will be between the two stars which mark the tips of the horns of the Bull in the midst of the brightest stars of the firmament—Auriga close to and north of him, Capella 20° further north and Betelguese about as far south; 3° 25′ south of ☽ April 22 in ♊, midway between Capella to the northwest and Procyon east of him; 2°9′ north of Ψ May 12; 3°40′ south of ☽ May 20 and still in ♊, where a line from Castor through Pollux, extended as far again will touch him; June 5 in south portion of the dense cluster of small stars known as Praesepe; 3°29′ south of ☽ June 18 in ♋, and 2°46′ south of ☽ July 16 while still in ♋ with Regulus, in the handle of the sickle in ♌ 5° west of him. During the remainder of the year he will be too near the Sun to follow him easily, being in ♏ at the close of the year.

Jupiter (♃), will be at his Brightest in May and June, rising about sunset and setting near sunrise and therefore Shining All Night. He will be a Morning Star until March 4 and an Evening Star after Aug. 30, being Invisible in December.

Jupiter will be in ♏ throughout the year. His ☌ with ♀ Jan. 9 and Oct. 7 has been noted under "Venus." His conjunctions with the ☽ will be as follows: Jan. 15 and Feb. 11, 4° north of ☽. On March 10, April 6, May 3 and 30, June 26, July 24, Aug. 30, Sept. 16, Oct. 14 and Nov. 11 he will pass about 5° to the north of the Moon.

Saturn (♄), will be Brightest in November and December and Invisible in May, being in ☌ with the ☉ May 14, when he will pass from the east to the west of the ☉, or from an Evening Star to a Morning Star.

At the beginning of the year he will be 15° west of the Pleiades and Hyades in ♈. His ☌ with ♀ May 27 was noted under "Venus." His conjunctions with the Moon will be as follows: Jan. 27, Feb. 24, March 22 and April 19, in all of which he will pass about 4° south of the ☽; July 10, Aug. 7, Sept. 3, Oct. 1 and 28, Nov. 24 and Dec. 21, in all of which he will pass about 6° south of the ☽. His marvelous ring system may be best observed from August to the end of the year.

Uranus (♁), will be Brightest in July and August, when he may be seen with the unaided eye, if very good, in the absence of the Moon, in the head of the Goat, about 4° south of the bright stars that mark this constellation, but dimmer than any of them, and rising at sunset.

Neptune (Ψ), will be Brightest in January in ♊, below Castor and Pollux, and rising at sunset. None of the planets will pass near enough to him in the early part of the year to serve as a means of identification, even with fairly good telescopes but without mathematical adjustment.

Situation of the Planets for the Sundays: also Moon's Position for the Year

EXPLANATION OF SIGNS.—♈ Aries. ♉ Taurus. ♊ Gemini. ♋ Cancer. ♌ Leo. ♍ Virgo. ♎ Libra. ♏ Scorpio. ♐ Sagittarius. ♑ Capricornus. ♒ Aquarius. ♓ Pisces. The place indicated for the planets is for the 1st, 2d, 3d, 4th and 5th Sundays of each month. in the order of the planets.

PLANET	Jan.	Feb.	Mch.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn	D. Cn
Venus (♀).....	7 ♍	4 ♐	3 ♑	7 ♒	5 ♓	2 ♉	7 ♊	4 ♋	1 ♌	6 ♎	3 ♍	1 ♐
Mars (♂).....	14 ♈	11 ♊	10 ♉	14 ♊	12 ♊	9 ♋	14 ♋	11 ♌	8 ♍	13 ♎	10 ♎	8 ♍
Jupiter (♃)....	21 ♍	18 ♍	17 ♍	21 ♍	19 ♍	16 ♍	21 ♍	18 ♍	15 ♍	20 ♍	17 ♍	15 ♍
Saturn (♄)....	28 ♈	25 ♈	24 ♈	28 ♈	26 ♈	23 ♈	28 ♉	25 ♉	22 ♉	27 ♉	24 ♉	22 ♉
Uranus (♅)...	....	....	31 ♐	....	....	30 ♐	....	....	29 ♐	....	....	29 ♐
☽ Perigee.....	4	1	1-28	22	19	16	14	12	9	7	3-28	25
☽ Apogee.....	17	14	12	9	7	4	1-28	25	21	19	16	14
☽ Highest (☊).	3-30	26	25	21	18	15	12	8	5	2-29	26	23†
☽ Lowest (☋).	16	12	11	7	5	1-28*	25	21	18	15	12	9
☽ at ♉.....	11	7	5	2-29	26	23	20	16	12	9	6	3-30
☽ at ♌.....	26	22	20	16	13	10	7	3-31	27	24	20	17
☽ on Equator.	9-24	6-20	4-18-31	14-28	12-25	8-21	5-18	2-15-29	11-26	8-23	5-19	2-16-29

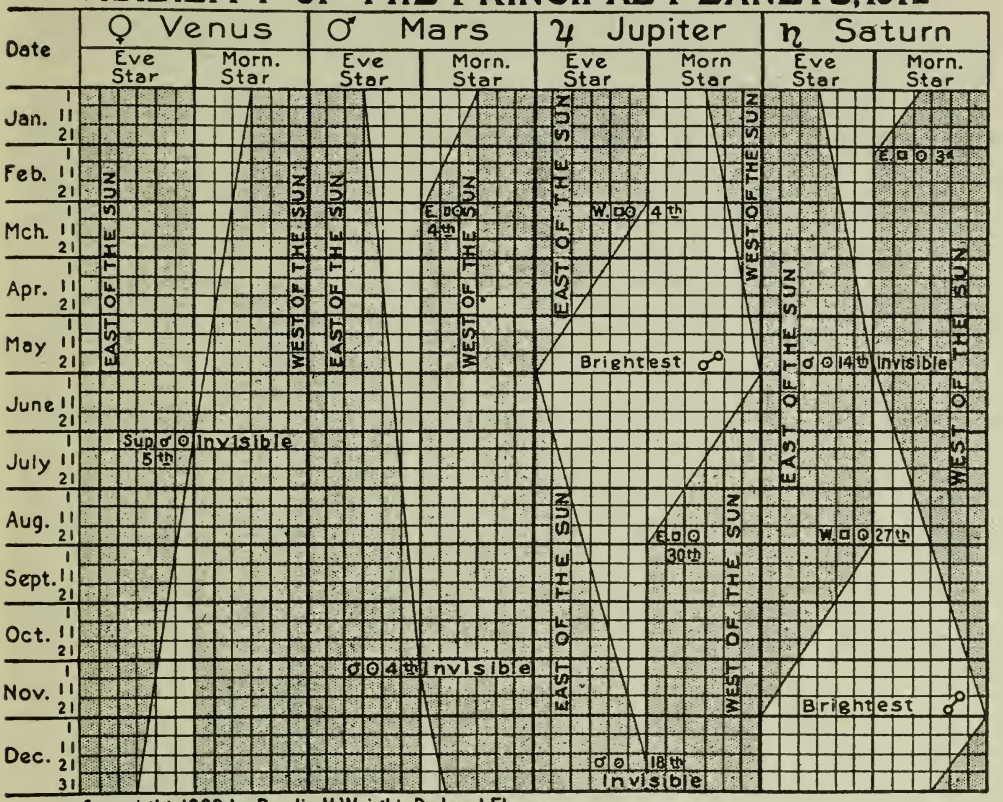
*Moon lowest of the year. †Moon ☺ highest of the year. See note of explanation of these movements or swing of the moon from lowest to highest of the year through an arc of 57° in 1910 issue of this almanac.

Meridian Passage, Rising and Setting of the Principal Planets

All P. M. figures are in black type. Mean Time.

MONTH	Day	Venus (♀)			Mars (♂)			Jupiter (♃)			Saturn (♄)		
			Rises			Sets			Rises			Sets	
		In Meridian	Southern States	Northern States	In Meridian	Southern States	Northern States	In Meridian	Southern States	Northern States	In Meridian	Southern States	Northern States
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Jan.....	1	8 59	3 46	4 3	**8 44**	3 39	4 5	9 32	4 27	4 47	**8 10**	2 41	2 56
	11	9 8	4 1	4 19	**8 9**	3 10	3 30	9 1	3 57	4 16	**7 26**	2 6	2 18
	21	9 18	4 18	4 38	**7 38**	2 41	3 2	8 29	3 26	3 43	**6 46**	1 26	1 38
Feb.....	1	9 32	4 32	4 53	**7 9**	2 14	2 35	7 54	2 53	3 13	**6 4**	0 44	0 56
	11	9 45	4 45	5 4	**6 45**	1 52	2 16	7 21	2 20	2 41	**5 26**	0 6	0 18
	21	9 58	4 55	5 14	**6 23**	1 32	1 56	6 47	1 46	2 6	**4 49**	**11 29**	**11 41**
March...	1	10 8	4 58	5 14	**6 5**	1 16	1 39	6 16	1 16	1 37	**4 17**	**10 53**	**11 7**
	11	10 18	4 58	5 13	**5 47**	0 58	1 23	5 39	0 39	1 0	**3 41**	**10 19**	**10 32**
	21	10 26	4 56	5 6	**5 30**	0 42	1 7	5 2	0 2	0 23	**3 5**	**9 45**	**9 58**
April....	1	10 34	4 50	4 55	**5 12**	0 24	0 51	4 20	**11 24**	**11 41**	**2 26**	**9 6**	**9 21**
	11	10 40	4 44	4 45	**4 56**	0 9	0 35	3 40	**10 44**	**11 4**	**1 52**	**8 33**	**8 48**
	21	10 46	4 38	4 36	**4 41**	**11 51**	0 16	2 58	**10 2**	**10 22**	**1 17**	**7 59**	**8 14**
May.....	1	10 52	4 32	4 25	**4 27**	**11 34**	**11 58**	2 16	**9 20**	**9 40**	**0 43**	**7 26**	**7 42**
	11	10 59	4 27	4 15	**4 12**	**11 17**	**11 40**	1 32	**8 36**	**8 47**	**0 9**	**6 54**	**7 10**
	21	11 7	4 23	4 8	**3 57**	**10 59**	**11 20**	0 48	**7 51**	**8 7**	11 35	invisible	
June.....	1	11 18	4 24	4 5	**3 41**	**10 38**	**10 58**	**11 54**	sets	sets	10 57	rise s	rises
	11	11 31	4 31	4 10	**3 26**	**10 19**	**10 36**	**11 10**	4 17	3 57	10 23	3 36	3 20
	21	11 44	4 39	4 16	**3 11**	**9 58**	**10 16**	**10 26**	3 33	3 13	9 28	3 1	2 43
July.....	1	11 58	4 52	4 28	**2 56**	**9 38**	**9 53**	**9 42**	2 49	2 29	9 14	2 26	2 9
	11	**0 12**	invisible		**2 40**	**9 16**	**9 24**	**9 0**	2 7	1 47	8 39	1 50	1 32
	21	**0 25**	sets	sets	**2 24**	**8 54**	**9 9**	**8 18**	1 25	1 5	8 3	1 13	0 56
August..	1	**0 37**	**7 23**	**7 38**	**2 6**	**8 29**	**8 37**	**7 34**	0 41	0 21	7 24	0 33	0 15
	11	**0 46**	**7 21**	**7 33**	**1 50**	**8 7**	**8 12**	**6 55**	0 2	**11 42**	6 47	**11 57**	**11 39**
	21	**0 54**	**7 17**	**7 25**	**1 34**	**7 44**	**7 48**	**6 18**	**11 21**	**11 1**	6 10	**11 20**	**11 2**
Sept.....	1	**1 1**	**7 9**	**7 12**	**1 17**	**7 20**	**7 20**	**5 38**	**10 41**	**10 21**	5 29	**10 39**	**10 21**
	11	**1 6**	**7 1**	**7 0**	**1 1**	**6 56**	**6 54**	**5 3**	**10 5**	**9 44**	4 50	**10 0**	**9 42**
	21	**1 12**	**6 54**	**6 48**	**0 45**	**6 34**	**6 30**	**4 29**	**9 30**	**9 10**	4 11	**9 21**	**9 3**
Oct.....	1	**1 18**	**6 48**	**6 37**	**0 30**	**6 12**	**6 6**	**3 56**	**8 58**	**8 37**	3 31	**8 41**	**8 23**
	11	**1 26**	**6 42**	**6 27**	**0 16**	**5 51**	**5 43**	**3 23**	**8 23**	**8 2**	2 50	**8 0**	**7 42**
	21	**1 36**	**6 45**	**6 23**	**0 2**	**5 30**	**5 20**	**2 52**	**7 51**	**7 29**	2 9	**7 19**	**7 1**
Nov.....	1	**1 50**	**6 47**	**6 24**	11 48	invisible		**2 18**	**7 16**	**6 54**	1 23	**6 33**	**6 16**
	11	**2 3**	**6 53**	**6 28**	11 36	rises	rises	**1 47**	**6 45**	**6 23**	0 40	**5 50**	**5 33**
	21	**2 18**	**7 7**	**6 41**	11 25	6 15	6 32	**1 17**	**6 15**	**5 51**	**11 53**	sets	sets
Dec.....	1	**2 32**	**7 24**	**7 0**	11 14	6 9	6 29	**0 47**	**5 44**	**5 21**	**11 11**	6 3	6 20
	11	**2 44**	**7 42**	**7 20**	11 5	6 5	6 26	**0 18**	☌ ☉ 18th		**10 28**	5 19	5 36
	21	**2 55**	**8 2**	**7 44**	10 57	6 0	6 23	11 49	invisible		**9 46**	4 37	4 54
	31	**3 2**	**8 20**	**8 6**	10 49	5 6	6 17	11 19	rises	rises	**9 5**	3 56	4 13

VISIBILITY OF THE PRINCIPAL PLANETS, 1912



Explanation

The light spaces show the approximate time and extent of visibility of the planets named. Each of the small divisions represent 15° of arc or 1 hour of time. The width of the light colored space is the measure of the angular distance of the planet from the sun, east or west as stated in the chart.

Examples: Venus will be about 3 hours or 45° west of the sun at the first of the year and therefore rise 3 hours before the sun. Mars will shine nearly equally in the evening and morning hours, Jupiter only for 3 hours in the morning and Saturn in both morning and evening.

Replies to all questions as to the Star and Planet Charts will be made to all who enclose a stamped and self-addressed envelope, by Berlin H. Wright, De Land, Fla., from whom can be obtained a Chart of the Heavens, similar to those published in this Almanac, but on a large scale, with star table of all the bright stars, positions of Planets and complete information and data for obtaining all their risings, settings, etc. Price 50c; 2 for 75c; or 3 for $1.00.

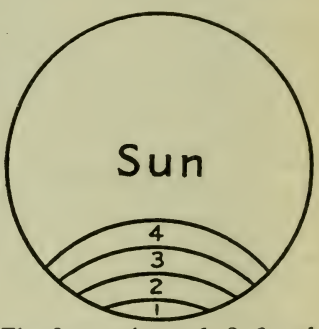
Eclipses, 1912

There will be four eclipses this year, two of the Sun and two of the Moon, as follows:

I. Partial of the Moon April 1, invisible in U. S. This is the last one of the series to which this eclipse belongs, which began on the Moon's northern limb in the year 1047.

II. Central and total of the Sun April 17. The Sun will rise more or less eclipsed throughout most of the southern, eastern and middle states: invisible west of a line from near Pensacola, through Memphis and Des Moines to Winnipeg. East of a line from near Sag Harbor, through Albany to Clayton, N. Y., the eclipse will be wholly visible but very small and on the southern limb of the Sun.

Throughout New England the eclipse will begin shortly after sunrise and end about 7 a.m.; size about three digits as shown in Fig. 1. At Boston the eclipse will begin at 5:30 a. m. and end at 6:32 a. m.: at New York City the eclipse will be on at sunrise and will end at 6:31 a. m., nearly 4 digits being eclipsed. The next eclipse of the series to which this one belongs will be April 27, 1930, which will be total also and visible in U. S. A complete series of solar eclipses includes 60 or 70 recurrences or saros periods and covers a period of over 1,000 years.

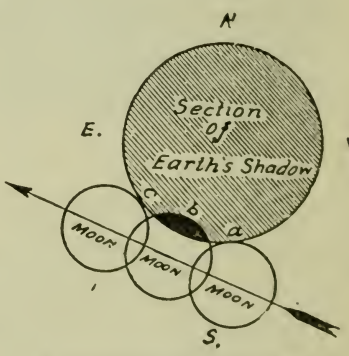


The figure shows 1, 2, 3 and 4 digits cut off from the sun's southern limb.
Fig. 1

III. Partial of the Moon September 26, the Moon setting as the eclipse begins in eastern U. S., where it will, therefore, be invisible. Visible as follows:

	Cent. Time H. M.	Mtn. Time H. M.	Pac. Time H. M.
Begins at (a)	5:03 a. m.	4:03 a. m.	3:03 a. m.
Mid'le at (b)	5:45 a. m.	4:45 a. m.	3:45 a. m.
End at (c)	6:26 a. m.	5:26 a. m.	4:26 a. m.

Size of the eclipse at **b**, 1.46 digits, as shown in the annexed figure, where the arrow indicates the path of the Moon through the southern portion of the earth's dark shadow from west to east. The next recurrence of this eclipse will be October 6, 1930, when the series closes, which began 865 years ago on the Moon's southern limb, since which time there have been 48 eclipses of this series.



Lunar Eclipse of Sept 26
Fig. 2

IV. Total of the Sun October 10, visible in the U. S. as a very small eclipse on the Sun's southern limb. In the gulf states the Sun will rise with the eclipse on. Throughout most of North and South Carolina the whole of the eclipse will be visible, just after sunrise, but will be very small, less than one digit being eclipsed (see Fig. 1.) The next eclipse of the series of which this is one will be October 21, 1930, when it will be total again.

Standard Time

For the convenience of the railroads and business in general, a standard of time was established by mutual agreement in 1883, and by this calculation trains are now run and local time is regulated. By this system the United States, extending from 65° to 125° west longitude, is divided into four time sections, each of 15° of longitude, exactly equivalent to one hour (7½° or 30 m.

on each side of a meridian), commencing with the 75th meridian. The first or eastern section includes all territory between the Atlantic coast and an irregular line drawn from Buffalo to Charleston, S. C., the latter city being its southernmost point. The second or central section includes all the territory between this eastern line and another irregular line extending from Bismarck, N. D., to the mouth of the Rio Grande. The third or mountain section includes all the territory between the last-named line and nearly all the western border of Idaho, Nevada, and Arizona. The fourth or Pacific section includes all the territory of the United States between the boundary of the mountain section and the Pacific coast. Inside of each of these sections standard time is uniform, and the time of each section differs from that next to it by exactly one hour.

It is obvious that to express the time of rising and setting of the Sun and Moon in standard time would limit the usefulness of such data to the single point or place for which it was computed, while in mean time it is practically correct for places as widely separated as the width of the continent (see note at bottom of February calendar), and persons having obtained the mean time by the rising or setting of the Sun or Moon, may easily ascertain the correct standard time of any event by making use of the table on Page 12.

The 60th, 75th, 90th, 105th, and 120th meridians west of Greenwich are the ones from which the various standards are reckoned. Ascertain which is the nearest to the point in question and the difference in longitude, then if the station be west of the meridian add this difference of longitude (4m. = 1°) and if east subtract, as indicated by the signs in the different divisions (see maps).

If the original plan of reckoning from certain hour meridians had been followed the correction could never be over 30 m., whereas it is often more. By reference to the following table and locating the place the correction is desired for (if not named in the table) by means of other places there named, the correction for all points may be readily obtained by approximation.

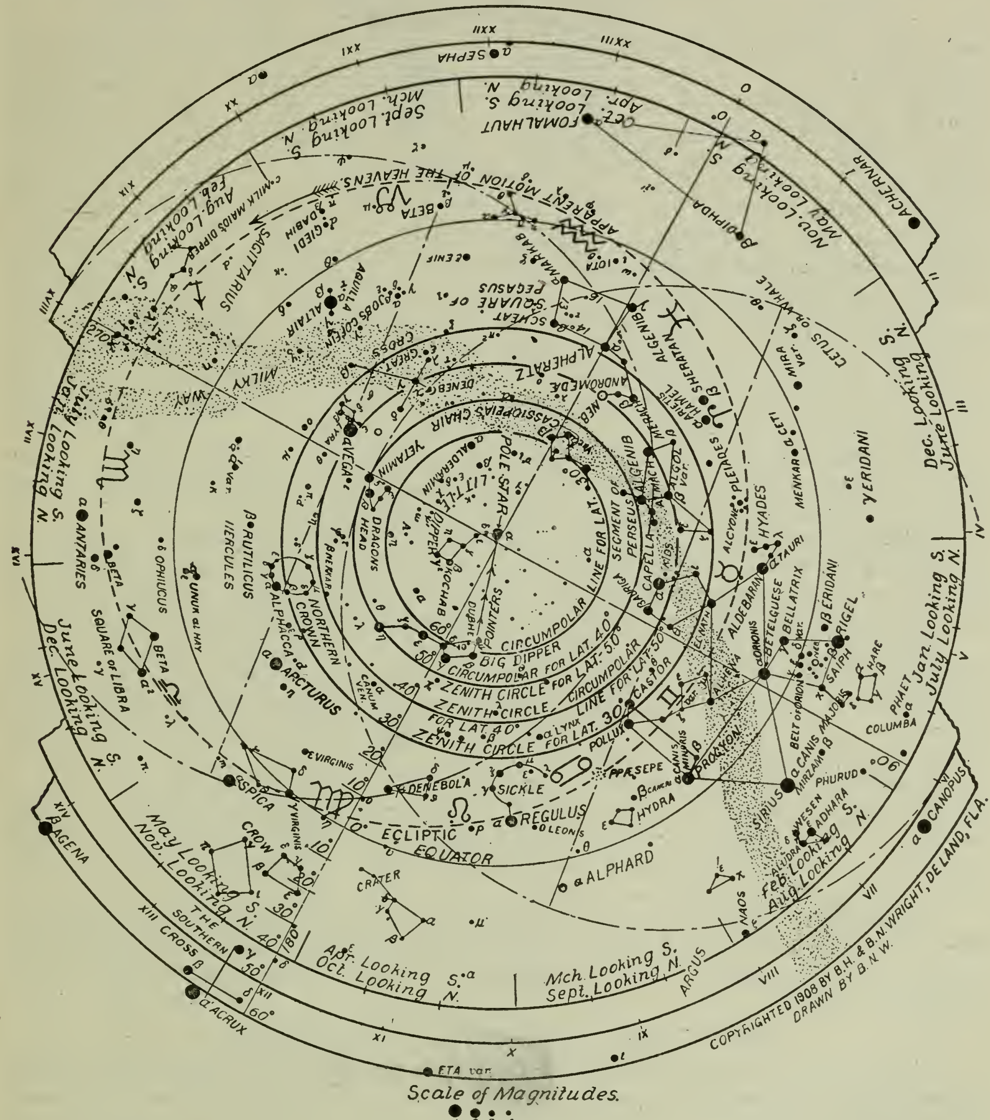
In the Dominion of Canada Pacific time is in use from Vancouver to Laggan; mountain time from Laggan to Broadview; central time from Broadview to Fort William; Eastern time from Fort William to Sault Ste. Marie and Detroit to Vanceboro; Atlantic or intercolonial time from Vanceboro eastward. (See table and map.)

Standard Time Table—United States

To obtain standard time, add or subtract the figures given to local time.

City	Standard or Division	Correc'n Minutes	City	Standard or Division	Correc'n Minutes
Albany, N. Y.	Eastern	Sub. 5	Little Rock, Ark.	Central	Add 9
Austin, Texas	Central	Add 31	Louisville, Ky.	Central	Sub. 18
Baltimore, Md.	Eastern	Add 6	Lynchburg, Va.	Eastern	Add 17
Baton Rouge, La.	Central	Add 40	Memphis, Tenn.	Central	Sub. 0
Bismarck, N. Dak.	Central	Add 43	Milwaukee, Wis.	Central	Sub. 8
Boston, Mass.	Eastern	Sub. 16	Mobile, Ala.	Central	Sub. 8
Buffalo, N. Y.	Eastern	Add 16	Montgomery, Ala.	Central	Sub. 15
Burlington, Iowa	Central	Add 5	Nashville, Tenn.	Central	Sub. 13
Cairo, Ill.	Central	Sub. 3	New Haven, Conn.	Eastern	Sub. 8
Charleston, S. C.	Eastern	Add 20	New Orleans, La.	Central	Add 0
Chicago, Ill.	Central	Sub. 10	New York, N. Y.	Eastern	Sub. 4
Cincinnati, Ohio	Central	Sub. 22	Norfolk, Va.	Eastern	Add 5
Cleveland, Ohio	Central	Sub. 33	Ogdensburg, N. Y.	Eastern	Add 2
Columbia, S. C.	Eastern	Add 24	Omaha, Neb.	Central	Add 24
Columbus, Ohio	Central	Sub. 28	Pensacola, Fla.	Central	Sub. 11
Dayton, Ohio	Central	Sub. 23	Philadelphia, Pa.	Eastern	Add 1
Denver, Colo.	Mount'n	Add 0	Pittsburg, Pa.	Eastern	Add 20
Des Moines, Iowa	Central	Add 14	Portland, Me.	Eastern	Sub. 19
Detroit, Mich.	Central	Sub. 28	Providence, R. I.	Eastern	Sub. 14
Dubuque, Iowa	Central	Add 3	Quincy, Ill.	Central	Add 6
Duluth, Minn.	Central	Add 9	Raleigh, N. C.	Eastern	Add 15
Erie, Pa.	Central	Sub. 39	Richmond, Va.	Eastern	Add 10
Evansville, Ind.	Central	Sub. 10	Rochester, N. Y.	Eastern	Add 11
Fort Gibson, Okla.	Central	Add 21	Rock Island, Ill.	Central	Add 3
Fort Smith, Ark.	Central	Add 19	San Francisco, Cal.	Pacific	Add 10
Fort Wayne, Ind.	Central	Sub. 20	Santa Fe, N. M.	Mount'n	Add 4
Galena, Ill.	Central	Add 2	Savannah, Ga.	Central	Sub. 36
Galveston, Texas	Central	Add 19	Shreveport, La.	Central	Add 15
Grand Haven, Mich.	Central	Sub. 15	Springfield, Ill.	Central	Sub. 2
Harrisburg, Pa.	Eastern	Add 7	St. Joseph, Mo.	Central	Add 19
Houston, Tex.	Central	Add 21	St. Louis, Mo.	Central	Add 1
Huntsville, Ala.	Central	Sub. 12	St. Paul, Minn.	Central	Add 12
Indianapolis, Ind.	Central	Sub. 16	Superior City, Wis.	Central	Add 8
Jackson, Miss.	Central	Add 1	Syracuse, N. Y.	Eastern	Add 5
Jacksonville, Fla.	Central	Sub. 33	Toledo, Ohio	Central	Sub. 26
Janesville, Wis.	Central	Sub. 4	Trenton, N. J.	Eastern	Sub. 1
Jefferson City, Mo.	Central	Add 9	Utica, N. Y.	Eastern	Add 1
Kansas City, Mo.	Central	Add 19	Washington, D. C.	Eastern	Add 8
Keokuk, Iowa	Central	Add 6	Wheeling, W. Va.	Eastern	Add 23
Knoxville, Tenn.	Central	Sub. 24	Wilmington, Del.	Eastern	Add 2
La Crosse, Wis.	Central	Add 5	Wilmington, N. C.	Eastern	Add 13
Lawrence, Kan.	Central	Add 21	Yankton, S. Dak.	Central	Add 29
Lexington, Ky.	Central	Sub. 23			

CHART OF THE HEAVENS



Explanation

If a bright, uncharted body be seen near the "Ecliptic Circle" it must be a planet. To locate the planets or Moon, refer to the monthly calendar pages in this Almanac, find the proper signs on the chart in the "Ecliptic Circle," and an inspection of that part of the Heavens, comparing with the Chart, will serve to identify the planet and all surrounding objects. (Large charts published.)

Because of the Earth's motion from west to east (opposite to the direction of the arrow in the chart), the stars rise 4 m. earlier each day or 30 m. per week or 2 hrs. a month. The chart shows the position at 9 p. m. Then if the position for any other hour be desired, as for 7 p m., count back one month, or ahead one month for 11 p. m., and so on for any hour of the night, holding the month desired in front (with name down) as the face looks either to the north or south.

A circle described from the zenith on the "Zenith Circle" for the desired latitude with a radius of 90 degrees (see graduated meridian) will show what stars are above the horizon. Thus Capella is near the overhead (zenith) point on Lat. 40 degrees N., Jan. 15th, 9 p. m., as will be Algenib in the handle of the "Big Dipper" at 3 a. m. Then from Capella or Algenib all the surrounding visible groups can be identified. The "Pointers" being 5 degrees apart and always in sight may be used as a convenient unit of measure; also when visible the "Belt of Orion" 3 degrees, or the sides of the "Square of Pegasus."

Questions will always be cheerfully answered. BERLIN H. WRIGHT,
(Enclose stamp or international post card or self-addressed envelope.) De Land, Fla.

Domestic Postage

First Class Matter (Letters, etc.) ..... 2 cents an ounce
Postal Cards ..... 1 cent each
Double Postal Cards ..... 2 cents each
Post Cards (Private Mailing Cards) ..... 1 cent each
Second Class (Newspapers, Periodicals) ..... 1 cent for 4 ounces
Third Class (Books, Circulars) ..... 1 cent for 2 ounces
Fourth Class (Merchandise) ..... 1 cent an ounce
Registration Fee (in addition to postage) ..... 10 cents
Special Delivery Stamp (addition to postage) ..... 10 cents
Domestic Money Order (see below) ..... 3 cents to 30 cents

First Class Matter—Letters and all other written matter (whether sealed or not), excepting manuscript copy accompanying proof-sheets, also all matter sealed (see below), two cents an ounce, excepting drop letters at **non-carrier** offices, the patrons of which cannot be served by rural carrier, one cent an ounce. Postal cards, one cent each. Post cards (private mailing cards), one cent each.

Second Class—Newspapers and periodicals, published quarterly and oftener, bearing notice of entry as second-class matter, the general public pay by affixing stamps at the rate of one cent for each four ounces or part thereof when not sealed.

Third Class—Books (printed, not blank), circulars, other printed matter, proof sheets and manuscript copy accompanying the same, valentines, sheet music, photographs, heliotypes, chromos, posters, lithographs and printed advertising matter on paper only—all, when not sealed, one cent for two ounces or fraction. Limit of weight, four pounds.

Fourth Class—Merchandise and samples, blank books and paper; ores; all matter not included in any of the other classes, and not in its nature perishable or liable to injure the contents of the mails (by express law the postage on seeds, cuttings, roots, scions, and plants is at the rate of one cent for each two ounces)—all, when not sealed, and not exceeding four pounds in weight, one cent an ounce or fraction.

Registration—Any class of mailable matter may be registered at any post-office or station thereof, and by any rural carrier. In residential districts of cities, letters and packages of first-class matter that are not cumbersome on account of size, shape, or weight can be registered by city carriers at the house door. The registration fee is 10 cents for each piece in addition to postage.

Indemnity for value up to $50 is paid for the loss of sealed domestic matter prepaid at the letter rate of postage; and for value up to 50 francs (or its equivalent in United States money) for loss of registered articles addressed to foreign countries embraced in the Universal Postal Union.

To Canada, Cuba, Panama, and Mexico

Mail matter of all kinds addressed for delivery in Canada, Cuba, Panama, and Mexico is admitted to the mails at domestic postage rates and conditions, except commercial papers and bona fide trade samples, which are admitted at a rate of two for one cent, if not weighing over twelve ounces. Seeds, bulbs, scions, and plants for Canada must be prepaid at the rate of one cent per ounce or fraction of an ounce; and packages of salable merchandise for Mexico must be sent by parcels post.

Postage to Porto Rico, Phillippines, Guam, Hawaii, Canal Zone

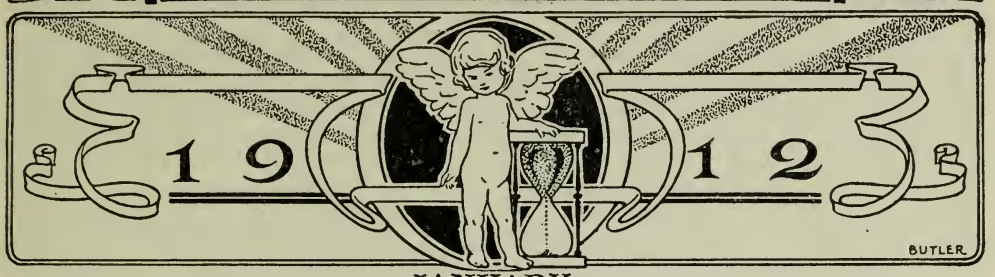
Same as domestic

Foreign Postage

The rates in the case of all foreign countries (except Canada, Cuba, Panama, and Mexico) are as follows: Letters, first ounce or less, 5 cents; each additional ounce or fraction, 3 cents; postal cards, 2 cents; newspapers and printed matter, per 2 ounces, 1 cent; samples of merchandise, first 4 ounces or less, 2 cents; each additional ounce or fraction, 1 cent (limit of weight, 12 ounces). Registration fee, 10 cents.

Letters for England, Ireland, Scotland, Wales, and Newfoundland, per ounce, 2 cents, and letters for Germany by steamers sailing for Germany direct, per ounce, 2 cents.

Sealing—Any matter is regarded as sealed when it is not so wrapped as to allow of a thorough examination without in any way injuring the wrapping.



JANUARY

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
Full Moon	4	9	30	8	30	7	30	6	30	5	30
Last Quarter	11	3	43	2	43	1	43	0	43	11	43 10th
New Moon	19	7	10	6	10	5	10	4	10	3	10
First Quarter	27	4	51	3	51	2	51	1	51	0	51

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S.& R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S.& R. H. M.
1	M	☽	♑	7 25	4 43	4 11	7 3	5 6	3 46
2	Tu	☽	♑	7 25	4 44	5 31	7 3	5 7	4 59
3	W	☽	♒	7 25	4 45	6 46	7 3	5 7	6 11
4	Th	♋	♒	7 25	4 46	rises	7 4	5 8	rises
5	Fr	♋	♓	7 25	4 47	6 7	7 4	5 9	6 36
6	Sat	♋	♓	7 25	4 48	7 27	7 4	5 10	7 49
7	Sun	♋	♈	7 25	4 49	8 45	7 4	5 11	9 0
8	M	♋	♈	7 24	4 50	9 59	7 4	5 11	10 5
9	Tu	♋	♉	7 24	4 51	11 8	7 4	5 12	11 8
10	W	♋	♉	7 24	4 52	morn	7 3	5 13	morn
11	Th	☾	♉	7 24	4 53	16	7 3	5 14	9
12	Fr	☾	♎	7 23	4 54	1 22	7 3	5 15	1 8
13	Sat	☾	♎	7 23	4 55	2 28	7 3	5 16	2 8
14	Sun	☾	♍	7 23	4 56	3 33	7 3	5 17	3 7
15	M	☾	♍	7 22	4 57	4 38	7 3	5 18	4 7
16	Tu	☾	♍	7 22	4 59	5 40	7 2	5 19	5 5
17	W	☾	♐	7 21	5 0	6 35	7 2	5 20	5 59
18	Th	☾	♐	7 21	5 1	7 22	7 2	5 21	6 47
19	Fr	●	♑	7 21	5 2	sets	7 1	5 21	sets
20	Sat	●	♑	7 20	5 3	6 10	7 1	5 22	6 33
21	Sun	●	♑	7 19	5 4	7 14	7 1	5 23	7 32
22	M	●	♒	7 18	5 5	8 19	7 0	5 24	8 30
23	Tu	●	♒	7 17	5 7	9 23	7 0	5 25	9 28
24	W	●	♓	7 17	5 8	10 26	6 59	5 26	10 24
25	Th	●	♓	7 16	5 9	11 31	6 59	5 27	11 23
26	Fr	●	♈	7 16	5 10	morn	6 58	5 28	morn
27	Sat	☽	♈	7 15	5 11	40	6 58	5 29	25
28	Sun	☽	♈	7 14	5 13	1 52	6 57	5 30	1 30
29	M	☽	♉	7 13	5 14	3 4	6 56	5 31	2 36
30	Tu	☽	♉	7 12	5 15	4 22	6 56	5 32	3 48
31	W	☽	♊	7 12	5 16	5 33	6 56	5 33	4 57

January was named from Janus, an ancient Roman divinity, and was added to the Roman Calendar 713 B.C.

Twilight Begins

Day	Southern States	Northern States
1	5:31	5:52
16	5:33	5:51

Twilight Ends

Day	Southern States	Northern States
1	6:36	6:15
16	6:47	7:29

Day's Length

Day	Southern States	Northern States
1	10 h. 16 m.	8:51
11	10 h. 23 m.	9:03
21	10 h. 32 m	9:23

The World's Calendar for Wheat Harvests

Every month in the year the world has a wheat harvest somewhere.

During January they are harvesting in New Zealand and the Argentine Republic.

JANUARY

If You Were Born in This Month (Dec. 21 to Jan. 20) you are proud, independent, neat, careful, detest flattery You think deeply, work hard, and can shoulder big responsibilities. If possible, get a business of your own, don t talk too much, cut out worry, and cultivate cheerfulness.

Fees for Money Orders payable in the United States (which includes Hawaii and Porto Rico) and its possessions comprising the Canal Zone (Isthmus of Panama), Guam, the Philippines, and Tutuila, Samoa; also for orders payable in Bahamas, Bermuda, British Guiana, British Honduras, Canada, Cuba, Mexico, Newfoundland, at the United States postal agency at Shanghai (China), and in certain islands in the West Indies.

Not over $2.50 ..... 3 cents	Over $30 to $40 ..... 15 cents
Over $2.50 to $5 ..... 5 cents	Over $40 to $50 ..... 18 cents
Over $5 to $10 ..... 8 cents	Over $50 to $60 ..... 20 cents
Over $10 to $20 ..... 10 cents	Over $60 to $75 ..... 25 cents
Over $20 to $30 ..... 12 cents	Over $75 to $100 ..... 30 cents

When payable in Cape Colony, France, Great Britain, Greece, Republic of Honduras, Italy, New South Wales, Queensland, Russia, Salvador, South Australia, Tasmania, and Victoria.

Not over $10 ..... 10 cents	Over $50 to $60 ..... 60 cents
Over $10 to $20 ..... 20 cents	Over $60 to $70 ..... 70 cents
Over $20 to $30 ..... 30 cents	Over $70 to $80 ..... 80 cents
Over $30 to $40 ..... 40 cents	Over $80 to $90 ..... 90 cents
Over $40 to $50 ..... 50 cents	Over $90 to $100 ..... 1 dollar

Fees for Foreign Money Orders when payable in Apia, Austria, Belgium, Bolivia, Chile, Costa Rica, Denmark, Egypt, Germany, Hongkong, Hungary, Japan, Liberia, Luxemburg, Netherlands, New Zealand, Norway, Orange River Colony, Peru, Portugal, Sweden, Switzerland, and Transvaal.

Not over $10 ..... 8 cents	Over $50 to $60 ..... 30 cents
Over $10 to $20 ..... 10 cents	Over $60 to $70 ..... 35 cents
Over $20 to $30 ..... 15 cents	Over $70 to $80 ..... 40 cents
Over $30 to $40 ..... 20 cents	Over $80 to $90 ..... 45 cents
Over $40 to $50 ..... 25 cents	Over $90 to $100 ..... 50 cents

Parcels Post Mails

Admissible Matter—Packages of mailable merchandise may be sent, in unsealed packages by "Parcels Post" to the following named countries: Australia, Austria, Bahamas, Barbados, Belgium, Bermuda, Bolivia, British Guiana, Chile, Colombia, Costa Rica, Denmark, Ecuador, France, Germany, Great Britain, Guatemala, Honduras (British), Honduras (Republic of), Hongkong, Italy, Jamaica, Japan, Leeward Islands, Mexico, New Zealand, Newfoundland, Nicaragua, Norway, Peru, Sweden, Salvador, The Danish West Indies, The Netherlands, Trinidad (including Tobago), Uruguay, Venezuela, Windward Islands, Dutch Guiana.

Postage Rates—Postage must be prepaid in full by stamps affixed at the rate of 12 cents a pound or fraction of a pound. Registry fee 10 cents in addition to postage.

Registration—The sender of a parcel addressed to any of the countries named in the table at the head of this section, except Barbados, France, Great Britain, The Netherlands, Uruguay, and Dutch Guiana, may have the same registered by paying a registry fee of 10 cents, and will receive the "Return Receipt" without special charge therefor, when envelope or wrapper is marked "Return Receipt Demanded."

Place of Mailing—Matter intended for Parcels Post must not be posted in a letter box, but must be taken to the postoffice and presented to the postmaster, or person in charge, for inspection.

Letters Prohibited—A letter or communication of the nature of personal correspondence must not accompany, be written on, or inclosed with, any parcel.

Foreign Money

English Money—Four farthings equals one penny (d); twelve pence equals one shilling (s); 20 shillings equals one pound (£).

French Money—Ten centimes equals one decime; ten decimes equals one franc.

German Money—One-hundred pfenning equals one mark.

Russian Money—One-hundred copecks equals one ruble.

Austro-Hungarian Money—One-hundred kreutzer equals one florin.

FEBRUARY

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
Full Moon	2	7	58	6	58	5	58	4	58	3	58
Last Quarter	9	8	51	7	51	6	51	5	51	4	51
New Moon	18	1	44	0	44	11	44 17th	10	44 17th	9	44 17th
First Quarter	25	3	27	2	27	1	27	0	27	11	27

Day of Wk.	Day Mo.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S.& R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S.& R. H. M.
1	Th	☽	♊	7 11	5 18	6 34	6 54	5 34	6 0
2	Fr	☾	♋	7 10	5 19	rises	6 54	5 35	rises
3	Sat	☾	♋	7 9	5 20	6 17	6 53	5 36	6 35
4	Sun	☾	♌	7 7	5 21	7 34	6 52	5 37	7 44
5	M	☾	♌	7 6	5 22	8 39	6 51	5 38	8 41
6	Tu	☾	♍	7 5	5 23	9 59	6 51	5 38	9 55
7	W	☾	♍	7 4	5 25	11 8	6 50	5 39	10 57
8	Th	☾	♎	7 3	5 26	morn	6 49	5 40	11 58
9	Fr	☾	♎	7 2	5 27	16	6 48	5 41	morn
10	Sat	☾	♏	7 1	5 28	1 23	6 47	5 42	59
11	Sun	☾	♏	7 0	5 30	2 30	6 46	5 43	1 59
12	M	☾	♏	6 58	5 31	3 33	6 45	5 44	2 59
13	Tu	☾	♐	6 57	5 32	4 30	6 44	5 45	3 54
14	W	☾	♐	6 56	5 34	5 19	6 43	5 46	4 44
15	Th	☾	♑	6 55	5 35	6 2	6 42	5 46	5 29
16	Fr	☾	♑	6 53	5 36	6 36	6 41	5 47	6 8
17	Sat	☾	♑	6 52	5 37	7 4	6 40	5 48	6 42
18	Sun	●	♒	6 51	5 39	sets	6 39	5 49	sets
19	M	●	♒	6 49	5 40	7 15	6 38	5 50	7 21
20	Tu	●	♓	6 48	5 41	8 20	6 37	5 51	8 20
21	W	●	♓	6 46	5 43	9 25	6 36	5 52	9 18
22	Th	●	♓	6 45	5 44	10 33	6 36	5 52	10 19
23	Fr	●	♈	6 44	5 45	11 42	6 35	5 53	11 22
24	Sat	●	♈	6 42	5 46	morn	6 34	5 54	morn
25	Sun	☽	♉	6 41	5 48	55	6 33	5 55	29
26	M	☽	♉	6 39	5 49	2 8	6 32	5 56	1 36
27	Tu	☽	♊	6 38	5 50	3 19	6 31	5 57	2 43
28	W	☽	♊	6 37	5 51	4 23	6 30	5 57	3 47
29	Th	☽	♋	6 36	5 52	5 15	6 29	5 58	4 43

February was named from the Roman divinity *Februus* (Pluto), or *Februa* (Juno), and was added to the Roman Calendar about 713 B. C.

Twilight Begins

Day	Southern States	Northern States
1	5:29	5:41
16	5:20	5:24

Twilight Ends

Day	Southern States	Northern States
1	7:00	6:46
16	7:10	7:05

Day's Length

Day	Southern States	Northern States
1	10 h. 48 m.	9:48
11	11 h. 3 m.	10:16
21	11 h. 20 m.	10:45

The World's Calendar for Wheat Harvests

During the latter part of February the harvest is on in East India, Upper Egypt and Chili.

In Upper Egypt the camel is used as a draft animal. In Chili the pony and oxen draw the harvesters. In East India the reaping hook is still used.

FEBRUARY

If You Were Born in This Month (Jan. 20 to Feb. 19) you should fight laziness and indifference, keep every engagement, concentrate, and make the most of your rare gifts. You are magnetic, and can succeed in almost any line of work to which you honestly apply yourself.

Transmitting Money Through the Banks

As a means of sending money to distant points, bank drafts are safe, convenient, and economical.

Bank drafts are absolutely safe. If lost in the mail, the bank will issue a duplicate at no additional expense; if paid to the wrong party, the bank so paying is responsible for the amount.

It is convenient to use this form of transmitting money. Simply go to the bank, tell the amount for which you wish the draft written, and name of the person or firm to whom it is to be sent. It is not necessary to register a draft in sending it through the mails, as it cannot be cashed by any one except the person to whom issued.

Bank drafts are the cheapest method of sending money, except of course paying by check. Drafts up to $20.00 cost 5 cents, and for larger amounts the rate is in proportion.

What Uncle Sam Is Doing for the Farmers

The sole object of the Department of Agriculture is to improve agricultural conditions. For this department, the Government in 1911 appropriated $13,487,636. This valuable service is absolutely free to farmers.

The department is divided into a number of bureaus which have charge of various branches of the work.

The **Bureau of Animal Industry** has charge of the work of the department relating to the live stock industry.

The **Bureau of Plant Industry** studies plant life in all its relations to agriculture. The Forest Service has charge of all investigations in forestry, and gives practical assistance to tree planters.

The **Bureau of Chemistry** investigates methods proposed for the analysis of plants, fertilizers, and agricultural products, and makes such analyses as pertain in general to the interests of agriculture.

The **Bureau of Soils** is intrusted with the investigation of surveying and mapping of soils, the investigation of the cause and prevention of the rise of alkali in soils, and the drainage of soils.

The **Bureau of Entomology** obtains and disseminates information regarding injurious insects affecting field crops, fruits, small fruits, truck crops, forests and forest products, stored products, etc.

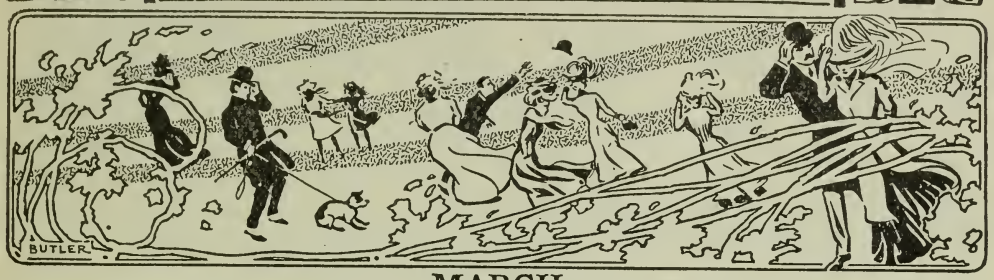
The **Bureau of Biological Survey** studies the geographic distribution of animals and plants, maps the natural life zones of the country, etc.

The **Bureau of Statistics** collects information as to the condition, production, etc., of the principal crops, and the status of farm animals; investigates land tenures, cost of producing farm products, country life education, transportation, and other lines of rural economics, issuing bulletins on these subjects.

In addition to the above bureaus, there is a Division of Accounts and Disbursements, Division of Publications, a Librarian, Office of Experiment Stations, and Office of Public Roads.

Appropriations for the Department of Agriculture—1911

Salaries	$1,473,650
Weather Bureau	1,318,610
Bureau of Animal Industry	1,734,540
Bureau of Plant Industry	1,502,936
Forest Service	4,947,900
Bureau of Chemistry	816,340
Bureau of Soils	193,600
Bureau of Entomology	502,900
Bureau of Biological Survey	71,520
Division of Publications	30,000
Bureau of Statistics	115,620
Library	15,400
Contingent Expenses	100,000
Agricultural Experiment Stations	1,021,740
Public Road Inquiries	92,980
	$13,487,636



MARCH

Moon's Phases	D.	Intercol. T. H.	Intercol. T. M.	Eastern T. H.	Eastern T. M.	Central T. H.	Central T. M.	Mountain T. H.	Mountain T. M.	Pacific T. H.	Pacific T. M.
○ Full Moon	3	6	42	5	42	4	42	3	42	2	42
☾ Last Quarter	10	3	56	2	56	1	56	0	56	11	56
● New Moon	18	6	9	5	9	4	9	3	9	2	9
☽ First Quarter	25	11	2	10	2	9	2	8	2	7	2

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES — Northern States: Sun Rises H.	Sun Rises M.	Sun Sets H.	Sun Sets M.	Moon S.& R. H.	Moon S.& R. M.	Southern States: Sun Rises H.	Sun Rises M.	Sun Sets H.	Sun Sets M.	Moon S.& R. H.	Moon S.& R. M.
1	Fri	☽	♋	6	35	5	53	5	59	6	28	5	58	5	32
2	Sat	☽	♌	6	34	5	53	rises		6	27	5	58	rises	
3	Sun	○	♌	6	32	5	54	6	22	6	26	5	59	6	28
4	M	○	♍	6	30	5	55	7	34	6	25	6	0	7	33
5	Tu	○	♍	6	29	5	56	8	47	6	24	6	1	8	39
6	W	○	♎	6	27	5	57	9	57	6	23	6	1	9	42
7	Th	○	♎	6	25	5	58	11	7	6	22	6	2	10	45
8	Fr	○	♎	6	24	5	59	morn		6	21	6	3	11	38
9	Sat	○	♏	6	22	6	0	6		6	20	6	3	morn	
10	Sun	☾	♏	6	20	6	1	1	22	6	19	6	4		49
11	M	☾	♐	6	19	6	2	2	23	6	17	6	5	1	47
12	Tu	☾	♐	6	17	6	3	3	15	6	16	6	6	2	39
13	W	☾	♐	6	16	6	4	4	1	6	14	6	6	3	26
14	Th	☾	♑	6	14	6	5	4	37	6	13	6	7	4	6
15	Fr	☾	♑	6	12	6	6	5	7	6	11	6	8	4	42
16	Sat	☾	♒	6	11	6	8	5	32	6	10	6	9	5	13
17	Sun	☾	♒	6	9	6	9	5	52	6	9	6	9	5	40
18	M	●	♒	6	7	6	10	sets		6	8	6	10	sets	
19	Tu	●	♓	6	6	6	11	7	15	6	6	6	11	7	10
20	W	●	♓	6	4	6	12	8	22	6	5	6	11	8	11
21	Th	●	♈	6	2	6	13	9	33	6	3	6	12	9	15
22	Fr	●	♈	6	1	6	14	10	45	6	2	6	13	10	20
23	Sat	●	♉	5	59	6	15	12	00	6	1	6	14	11	28
24	Sun	●	♉	5	58	6	16	morn		5	59	6	14	morn	
25	M	☽	♊	5	56	6	17	1	12	5	58	6	15		37
26	Tu	☽	♊	5	54	6	18	2	16	5	57	6	16	1	40
27	W	☽	♋	5	52	6	19	3	11	5	56	6	16	2	37
28	Th	☽	♋	5	51	6	20	3	56	5	55	6	17	3	27
29	Fr	☽	♌	5	49	6	21	4	31	5	54	6	18	4	9
30	Sat	☽	♌	5	47	6	22	4	59	5	52	6	18	4	44
31	Sun	☽	♌	5	45	6	23	5	22	5	50	6	19	5	16

March was named from Mars, the god of war. It was the first month of the Roman year.

Twilight Begins

Day	Southern States	Northern States
1	5:07	5:00
16	4:50	4:33

Twilight Ends

Day	Southern States	Northern States
1	7:18	7:25
16	7:28	7:46

Day's Length

Day	Southern States	Northern States
1	11 h. 33 m.	11 h. 12 m.
11	11 h. 52 m.	11 h. 45 m.
21	12 h. 10 m.	12 h. 15 m.

The World's Calendar for Wheat Harvests

March witnesses a continuation of the harvest begun during February in East India, Upper Egypt and Chili.

MARCH

If You Were Born in This Month (Feb. 19 to March 21) you are very loyal to your friends, rarely look for dishonesty, and are over-generous. Grow a little self-esteem, learn the value of silence, be less heedless, and then seek a position of responsibility and trust.

Farmers' Bulletins

Bulletins in this list will be sent free, so long as the supply lasts, to any resident of the United States, on application to his **Senator, Representative, or Delegate in Congress,** or to the Secretary of Agriculture, Washington, D. C. *Because of the limited supply, applicants are urged to select only a few numbers, choosing those which are of special interest to them.* Residents of foreign countries should apply to the Superintendent of Documents, Government Printing Office, Washington, D. C., who has these bulletins for sale. Price 5 cents each to Canada, Cuba, and Mexico; 6 cents to other foreign countries. The bulletins entitled "Experiment Station Work" give briefly the results of experiments performed by the State experiment stations.

22. The Feeding of Farm Animals
27. Flax for Seed and Fiber
28. Weeds; And How to Kill Them
30. Grape Diseases on the Pacific Coast
32. Silos and Silage
34. Meats: Composition and Cooking
35. Potato Culture
36. Cotton Seed and Its Products
44. Commercial Fertilizers
48. The Manuring of Cotton
49. Sheep Feeding
51. Standard Varieties of Chickens
52. The Sugar Beet
54. Some Common Birds
55. The Dairy Herd
56. Experiment Station Work—I.
60. Methods of Curing Tobacco
61. Asparagus Culture
62. Marketing Farm Produce
64. Ducks and Geese
65. Experiment Station Work—II.
69. Experiment Station Work—III.
73. Experiment Station Work—IV.
77. The Liming of Soils
78. Experiment Station Work—V.
79. Experiment Station Work—VI.
81. Corn Culture in the South
82. The Culture of Tobacco
83. Tobacco Soils
84. Experiment Station Work—VII.
85. Fish as Food
86. Thirty Poisonous Plants
87. Experiment Station Work—VIII.
88. Alkali Lands
91. Potato Diseases and Treatment
92. Experiment Station Work—IX.
93. Sugar as Food
96. Raising Sheep for Mutton
97. Experiment Station Work—X.
99. Insect Enemies of Shade Trees
101. Millets
103. Experiment Station Work—XI.
104. Notes on Frost
105. Experiment Station Work—XII.
106. Breeds of Dairy Cattle
113. The Apple and How to Grow It
114. Experiment Station Work—XIV.
118. Grape Growing in the South
119. Experiment Station Work—XV.
120. Insects Affecting Tobacco
121. Beans, Peas, and Other Legumes as Food
122. Experiment Station Work—XVI.
126. Practical suggestions for Farm Buildings
127. Important Insecticides
128. Eggs and Their Uses as Food
131. Household Tests for Detection of Oleomargarine and Renovated Butter
133. Experiment Station Work—XVIII.
134. Tree Planting on Rural School Grounds
137. The Angora Goat
138. Irrigation in Field and Garden
139. Emmer: A Grain for the Semi-arid Regions
140. Pineapple Growing
142. Principles of Nutrition and Nutritive Value of Food
144. Experiment Station Work—XIX.
149. Experiment Station Work—XX.
150. Clearing New Land
152. Scabies of Cattle
154. The Home Fruit Garden: Preparation and Care
155. How Insects Affect Health in Rural Districts
156. The Home Vineyard
157. The Propagation of Plants
158. How to Build Small Irrigation Ditches
162. Experiment Station Work—XXI.
164. Rape as a Forage Crop
166. Cheese Making on the Farm
167. Cassava
169. Experiment Station Work—XXII.
170. Principles of Horse Feeding
172. Scale Insects and Mites on Citrus Trees
173. Primer of Forestry. Part I: The Forest
174. Broom Corn
175. Home Manufacture and Use of Unfermented Grape Juice
176. Cranberry Culture
177. Squab Raising
178. Insects Injurious in Cranberry Culture
179. Horseshoeing
181. Pruning
182. Poultry as Food
183. Meat on the Farm: Butchering, Curing, and Keeping
185. Beautifying the Home Grounds
186. Experiment Station Work—XXIII.
187. Drainage of Farm Lands
188. Weeds Used in Medicine
190. Experiment Station Work—XXIV.
192. Barnyard Manure
193. Experiment Station Work—XXV.
194. Alfalfa Seed
195. Annual Flowering Plants
196. Usefulness of the American Toad
197. Importation of Game Birds and Eggs for Propagation
198. Strawberries
200. Turkeys
201. Cream Separator on Western Farms
202. Experiment Station Work—XXVI.
203. Canned Fruits, Preserves, and Jellies
204. The Cultivation of Mushrooms
205. Pig Management
206. Milk Fever and Its Treatment
209. Controlling the Boll Weevil in Cotton Seed and at Ginneries
210. Experiment Station Work—XXVII.
213. Raspberries
218. The School Garden
219. Lessons from the Grain Rust Epidemic of 1904
220. Tomatoes
221. Fungous Diseases of the Cranberry

APRIL

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	MountainT. H.	M.	Pacific T. H.	M
♋ Full Moon	1	6	4	5	4	4	4	3	4	2	4
☾ Last Quarter	9	11	24	10	24	9	24	8	24	7	24
♍ New Moon	17	7	40	6	40	5	40	4	40	3	40
☽ First Quarter	24	4	47	3	47	2	47	1	47	0	47

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H.	M.	Sun Sets H.	M.	Moon R. & S. H.	M.	Southern States Sun Rises H.	M.	Sun Sets H.	M.	Moon R. & S. H.	M.
1	M	♋	♍	5	44	6	24	rises		5	47	6	21	rises	
2	Tu	♋	♍	5	42	6	26	7	34	5	45	6	21	7	23
3	W	♋	♎	5	41	6	27	8	46	5	44	6	22	8	28
4	Th	♋	♎	5	39	6	28	9	57	5	43	6	23	9	31
5	Fr	♋	♏	5	37	6	29	11	5	5	41	6	24	10	34
6	Sat	♋	♏	5	36	6	30	morn		5	40	6	25	11	34
7	Sun	♋	♏	5	34	6	31		9	5	39	6	26	morn	
8	M	♋	♐	5	33	6	32		54	5	38	6	26		27
9	Tu	☾	♐	5	31	6	33	1	55	5	36	6	27	1	20
10	W	☾	♑	5	30	6	34	2	36	5	35	6	28	2	4
11	Th	☾	♑	5	28	6	35	3	7	5	34	6	29	2	40
12	Fr	☾	♑	5	26	6	36	3	34	5	33	6	29	3	12
13	Sat	☾	♒	5	25	6	37	3	57	5	31	6	30	3	42
14	Sun	☾	♒	5	24	6	38	4	16	5	30	6	31	4	7
15	M	☾	♓	5	22	6	39	4	37	5	29	6	31	4	34
16	Tu	☾	♓	5	20	6	40	4	56	5	28	6	32	5	1
17	W	♍	♈	5	19	6	41	sets		5	27	6	33	sets	
18	Th	♍	♈	5	17	6	42	8	31	5	25	6	33	8	9
19	Fr	♍	♉	5	16	6	43	9	46	5	24	6	34	9	17
20	Sat	♍	♉	5	14	6	44	11	0	5	23	6	35	10	26
21	Sun	♍	♉	5	13	6	45	morn		5	22	6	36	11	32
22	M	♍	♊	5	11	6	46		9	5	21	6	36	morn	
23	Tu	♍	♊	5	10	6	47	1	7	5	20	6	37		32
24	W	☽	♋	5	8	6	48	1	56	5	19	6	38	1	25
25	Th	☽	♋	5	7	6	49	2	34	5	18	6	39	2	10
26	Fr	☽	♌	5	6	6	50	3	3	5	17	6	39	2	46
27	Sat	☽	♌	5	4	6	51	3	28	5	16	6	40	3	18
28	Sun	☽	♍	5	3	6	52	3	50	5	15	6	40	3	47
29	M	☽	♍	5	2	6	53	4	10	5	14	6	41	4	15
30	Tu	☽	♎	5	0	6	55	4	31	5	13	6	41	4	43

April was named from *aperire* (to open), the season when buds open.

Twilight Begins

Day	Southern States	Northern States
1	4:30	4:01
16	4:10	3:28

Twilight Ends

Day	Southern States	Northern States
1	7:39	8:00
16	7:50	8:33

Day's Length

Day	Southern States	Northern States
1	12 h. 30 m.	12 h. 49 m.
11	12 h. 48 m.	13 h. 19 m.
21	13 h. 5 m.	13 h. 51 m.

The World's Calendar for Wheat Harvests

April is the harvest month in Lower Egypt, Asia Minor and Mexico.

In Mexico the harvest is carried on almost as it is in this country, except that oxen are frequently used in place of horses.

APRIL

If You Were Born in This Month (March 21 to April 19) you have executive ability, are earnest and determined. You nearly always will accomplish what you set out to do if you but learn to hold your temper, avoid stimulants, cultivate patience, and take time to decide.

Farmers' Bulletins (Continued)

222. Experiment Station Work—XXVIII.
223. Miscellaneous Cotton Insects in Texas
224. Canadian Field Peas
225. Experiment Station Work—XXIX.
227. Experiment Station Work—XXX.
228. Forest Planting and Farm Management
229. The Production of Good Seed Corn
231. Spraying for Cucumber and Melon Diseases
232. Okra: Its Culture and Uses
233. Experiment Station Work—XXXI.
234. The Guinea Fowl
235. Preparation of Cement Concrete
236. Incubation and Incubators
237. Experiment Station Work—XXXII.
238. Citrus Fruit Growing in the Gulf States
239. The Corrosion of Fence Wire
241. Butter Making on the Farm
242. An Example of Model Farming
243. Fungicides and Their Use in Preventing Diseases of Fruits
244. Experiment Station Work—XXXIII.
245. Renovation of Worn-Out Soils
246. Saccharine Sorghums for Forage
248. The Lawn
249. Cereal Breakfast Foods
250. The Prevention of Stinking Smut of Wheat and Loose Smut of Oats
251. Experiment Station Work—XXXIV.
252. Maple Sugar and Sirup
253. The Germination of Seed Corn
254. Cucumbers
255. The Home Vegetable Garden
256 Preparation of Vegetables for the Table
257. Soil Fertility
258. Texas or Tick Fever and Its Prevention
259. Experiment Station Work—XXXV.
260. Seed of Red Clover and Its Impurities
262. Experiment Station Work—XXXVI.
263. Practical Information for Beginners in Irrigation
264. The Brown-Tail Moth and How to Control It
266. Management of Soils to Conserve Moisture
267. Experiment Station Work—XXXVII.
269. Industrial Alcohol: Uses and Statistics
270. Modern Conveniences for the Farm Home
271. Forage Crop Practices in Western Oregon and Western Washington
272. A Successful Hog and Seed-Corn Farm
273. Experiment Station Work—XXXVIII.
274. Flax Culture
275. The Gipsy Moth and How to Control It
276. Experiment Station Work—XXXIX.
277. The Use of Alcohol and Gasoline in Farm Engines
278. Leguminous Crops for Green Manuring
279. A Method of Eradicating Johnson Grass
280. A Profitable Tenant Dairy Farm
281. Experiment Station Work—XL.
282. Celery
283. Spraying for Apple Diseases and the Codling Moth in the Ozarks
284. Insect and Fungous Enemies of the Grape East of the Rocky Mountains
286. Comparative Value of Whole Cotton Seed and Cotton-Seed Meal in Fertilizing Cotton
287. Poultry Management
288. Non-saccharine Sorghums
289. Beans
290. The Cotton Boll Worm
291. Evaporation of Apples
292. Cost of Filling Silos
293. Use of Fruit as Food
294. Farm Practice in the Columbia Basin Uplands
295. Potatoes and Other Root Crops as Food
296. Experiment Station Work—XLI.
298. Food Value of Corn and Corn Products
299. Diversified Farming Under the Plantation System
301. Home-Grown Tea
302. Sea Island Cotton: Its Culture, Improvement, and Diseases
303. Corn Harvesting Machinery
304. Growing and Curing Hops
305. Experiment Station Work—XLII.
306. Dodder in Relation to Farm Seeds
307. Roselle: Its Culture and Uses
309. Experiment Station Work—XLIII.
310. A Successful Alabama Diversification Farm
311. Sand-Clay and Burnt-Clay Roads
312. A Successful Southern Hay Farm
313. Harvesting and Storing Corn
314. A Method of Breeding Early Cotton to Escape Boll-Weevil Damage
316. Experiment Station Work—XLIV.
317. Experiment Station Work—XLV.
318. Cowpeas
320. Experiment Station Work—XLVI.
321. The Use of the Split-Log Drag on Earth Roads
322. Milo as a Dry-Land Grain Crop
323. Clover Farming on the Sandy Jack-pine Lands of the North
324. Sweet Potatoes
325. Small Farms in the Corn Belt
326. Building Up a Run-Down Cotton Plantation
328. Silver Fox Farming
329. Experiment Station Work—XLVII.
330. Deer Farming in the United States
331. Forage Crops for Hogs in Kansas and Oklahoma
332. Nuts and Their Uses as Food
333. Cotton Wilt
334. Experiment Station Work—XLVIII.
335. Harmful and Beneficial Mammals o the Arid Interior
337. Cropping Systems for New England Dairy Farms
338. Macadam Roads
339. Alfalfa
341. The Basket Willow
342. Experiment Station Work—XLIX.
343. The Cultivation of Tobacco in Kentucky and Tennessee
344. The Boll Weevil Problem, With Special Reference to Means of Reducing Damage
345. Some Common Disinfectants
346. The Computation of Rations for Farm Animals by the use of Energy Values
347. The Repair of Farm Equipment
348. Bacteria in Milk
349. The Dairy Industry in the South
350. The Dehorning of Cattle
351. The Tuberculin Test of Cattle for Tuberculosis
352. The Nevada Mouse Plague of 1907-8
353. Experiment Station Work—L.
354. Onion Culture
355. A Successful Poultry and Dairy Farm
357. Methods of Poultry Management at the Maine Agricultural Experiment Station

MAY

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
Full Moon	1	6	19	5	19	4	19	3	19	2	19
Last Quarter	9	5	56	4	56	3	56	2	56	1	56
New Moon	16	6	13	5	13	4	13	3	13	2	13
First Quarter	23	10	11	9	11	8	11	7	11	6	11
Full Moon	30	7	29	6	29	5	29	4	29	3	29

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.
1	W	♋	♎	4 59	6 56	rises	5 12	6 42	rises
2	Th	♋	♏	4 58	6 57	8 49	5 11	6 42	8 20
3	Fr	♋	♏	4 56	6 58	9 50	5 10	6 44	9 21
4	Sat	♋	♏	4 55	6 59	10 50	5 9	6 44	10 21
5	Sun	♋	♐	4 54	7 0	11 49	5 8	6 45	11 13
6	M	♋	♐	4 53	7 1	morn	5 7	6 46	11 58
7	Tu	♋	♑	4 52	7 2	32	5 6	6 47	morn
8	W	♋	♑	4 51	7 3	1 7	5 5	6 47	37
9	Th	☾	♑	4 49	7 4	1 35	5 4	6 48	1 11
10	Fr	☾	♒	4 48	7 5	1 59	5 3	6 49	1 41
11	Sat	☾	♒	4 47	7 6	2 19	5 3	6 50	2 8
12	Sun	☾	♓	4 46	7 7	2 39	5 2	6 50	2 34
13	M	☾	♓	4 45	7 8	2 59	5 1	6 51	3 01
14	Tu	☾	♓	4 44	7 9	3 20	5 1	6 52	3 28
15	W	☾	♈	4 43	7 10	3 43	5 0	6 52	3 58
16	Th	●	♈	4 42	7 11	4 13	6 59	6 53	4 35
17	Fr	●	♉	4 41	7 12	sets	6 59	6 54	sets
18	Sat	●	♉	4 40	7 13	9 56	6 58	6 54	9 20
19	Sun	●	♊	4 39	7 14	11 1	6 58	6 55	10 25
20	M	●	♊	4 39	7 15	11 53	6 57	6 56	11 21
21	Tu	●	♋	4 38	7 16	morn	6 56	6 56	morn
22	W	●	♋	4 37	7 17	36	6 56	6 57	9
23	Th	☽	♌	4 36	7 18	1 5	6 55	6 58	47
24	Fr	☽	♌	4 36	7 19	1 32	6 55	6 58	1 21
25	Sat	☽	♍	4 35	7 20	1 54	6 55	6 59	1 50
26	Sun	☽	♍	4 34	7 20	2 16	6 54	7 0	2 18
27	M	☽	♎	4 34	7 21	2 36	6 54	7 0	2 46
28	Tu	☽	♎	4 33	7 22	2 58	6 53	7 1	3 15
29	W	☽	♎	4 32	7 23	3 23	6 53	7 2	3 46
30	Th	♋	♏	4 32	7 23	rises	6 53	7 2	rises
31	Fr	♋	♏	4 31	7 24	8 43	6 53	7 3	8 8

May was named from the Latin *Maius*, the growing month.

Twilight Begins

Day	Southern States	Northern States
1	3:51	2:54
16	3:36	2:22

Twilight Ends

Day	Southern States	Northern States
1	8:04	9:01
16	8:17	9:32

Day's Length

Day	Southern States	Northern States
1	13 h. 22 m.	14 h. 18 m.
11	13 h. 36 m.	14 h. 43 m.
21	13 h. 48 m.	15 h. 5 m.

The World's Calendar for Wheat Harvests

May is the harvest season in Algiers, Central Asia, China, Japan and Texas.

Texas is the first state in this country to begin the wheat harvest.

MAY

If You Were Born in This Month (April 19 to May 20) you are apt to take upon your own shoulders the burdens of others. You are too fond of the good things of the earth. Both love and hate are strong. Curb your passions, conquer self, and think good thoughts.

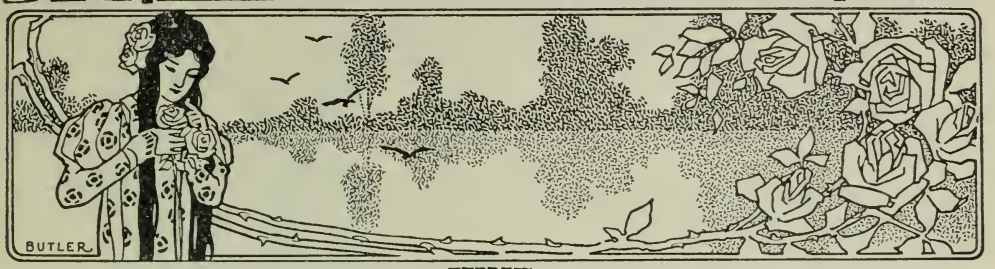
Farmers' Bulletins (Continued)

358. A Primer of Forestry. Part II. Practical Forestry
359. Canning Vegetables in the Home
360. Experiment Station Work—LI.
361. Meadow Fescue: Its Culture and Uses
362. Conditions Affecting the Value of Market Hay
363. The Use of Milk as Food
364. A Profitable Cotton Farm
365. Farm Management in Northern Potato-Growing Sections
366. Experiment Station Work—LII.
367. Lightning and Lightning Conductors
368. The Eradication of Bindweed, or Wild Morning-Glory
369. How to Destroy Rats
370. Replanning a Farm for Profit
371. Drainage of Irrigated Lands
372. Soy Beans
373. Irrigation of Alalfa
374. Experiment Station Work—LIII.
375. Care of Food in the Home
377. Harmfulness of Headache Mixtures
378. Methods of Exterminating the Texas-Fever Tick
379. Hog Cholera
380. The Loco-Weed Disease
381. Experiment Station Work—LIV.
382. The Adulteration of Forage-Plant Seeds
383. How to Destroy English Sparrows
384. Experiment Station Work— V.
385. Boys' and Girls' Agricultural Clubs
386. Potato Culture on Irrigated Farms of the West
387. The Preservative Treatment of Farm Timbers
388. Experiment Station Work—LVI.
389. Bread and Bread Making
390. Pheasant Raising in the United States
391. Economical Use of Meat in the Home
392. Irrigation of Sugar Beets
393. Habit-Forming Agents
394. The Use of Windmills in Irrigation in the Semi-arid West
395. Sixty-Day and Kherson Oats
396. The Muskrat
398. Farm Practice in the Use of Commercial Fertilizers in the South Atlantic States
399. Irrigation of Grain
400. A More Profitable Corn-Planting Method
401. The Protection of Orchards in the Pacific Northwest From Spring Frosts by Means of Fires and Smudges
402. Canada Bluegrass: Its Culture and Uses
403. The Construction of Concrete Fence Posts
404. Irrigation of Orchards
405. Experiment Station Work—LVII.
406. Soil Conservation
407. The Potato as a Truck Crop
408. School Exercises in Plant Production
409. School Lessons on Corn
410. Potato Culls as a Source of Industrial Alcohol
411. Feeding Hogs in the South
412. Experiment Station Work—LVIII.
413. The Care of Milk and Its Use in the Home
414. Corn Cultivation
415. Seed Corn
416. The Production of Cigar-Leaf Tobacco in Pennsylvania
417. Rice Culture
418. Game Laws for 1910
419. Experiment Station Work—LIX.
420. Oats: Distribution and Uses
421. Control of Blowing Soils
422. Demonstration Work on Southern Farms
423. Forest Nurseries for Schools
424. Oats: Growing the Crop
425. Experiment Station Work—LX.
426. Canning Peaches on the Farm
427. Barley Culture in the Southern States
428. Testing Farm Seeds in the Home and in the Rural School
429. Industrial Alcohol: Sources and Manufacture
430. Experiment Station Work—LXI.
431. The Peanut
432. How a City Family Managed a Farm
433. Cabbage
434. The Home Production of Onion Seed and Sets
435. Experiment Station Work—LXII.
436. Winter Oats for the South
437. A System of Tenant Farming and Its Results
438. Hog Houses
439. Anthrax, With Special Reference to Its Suppression
440. Spraying Peaches for the Control of Brown-Rot, Scab, and Curculio
441. Lespedeza, or Japan Clover
442. The Treatment of Bee Diseases
443. Barley: Growing the Crop
444. Remedies and Preventives Against Mosquitoes
445. Marketing Eggs Through the Creamery
446. The Choice of Crops for Alkali Land
447. Bees
448. Better Grain-Sorghum Crops
449. Rabies or Hydrophobia
450. Some Facts About Malaria
451. Experiment Station Work—LXIII.
452. Capons and Caponizing

IHC Service Bureau

The Bureau is a clearing house of agricultural data. It aims to learn the best ways of doing things on the farm, and then distribute the information. Your individual experience may help others. Send your problem to the I H C Service Bureau.

Address, I H C Service Bureau, Harvester Bldg., Chicago, U. S. A.



JUNE

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
☾ Last Quarter	7	10	36	9	36	8	36	7	36	6	36
● New Moon	15	2	24	1	24	0	24	11	24 14th	10	24 14th
☽ First Quarter	21	4	39	3	39	2	39	1	39	0	39
○ Full Moon	29	9	34	8	34	7	34	6	34	5	34

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.
1	Sat	♋	♐	4 31	7 24	9 41	4 52	7 3	9 5
2	Sun	♋	♐	4 30	7 25	10 28	4 52	7 4	9 53
3	M	♋	♐	4 30	7 26	11 7	4 52	7 4	10 35
4	Tu	♋	♑	4 30	7 26	11 36	4 52	7 5	11 10
5	W	♋	♑	4 29	7 27	morn	4 51	7 5	11 42
6	Th	♋	♒	4 29	7 28	2	4 51	7 6	morn
7	Fr	☾	♒	4 29	7 28	22	4 51	7 6	8
8	Sat	☾	♒	4 29	7 29	43	4 51	7 7	35
9	Sun	☾	♓	4 28	7 30	1 0	4 51	7 7	59
10	M	☾	♓	4 28	7 30	1 21	4 51	7 8	1 27
11	Tu	☾	♈	4 28	7 31	1 43	4 51	7 8	1 55
12	W	☾	♈	4 28	7 31	2 8	4 51	7 9	2 27
13	Th	☾	♉	4 28	7 32	2 41	4 51	7 9	3 8
14	Fr	☾	♉	4 28	7 32	3 24	4 51	7 9	3 56
15	Sat	●	♊	4 28	7 32	sets	4 51	7 10	sets
16	Sun	●	♊	4 28	7 33	9 43	4 51	7 10	9 9
17	M	●	♋	4 28	7 33	10 30	4 52	7 10	10 2
18	Tu	●	♋	4 28	7 33	11 7	4 52	7 11	10 45
19	W	●	♌	4 28	7 34	11 36	4 52	7 11	11 22
20	Th	●	♌	4 29	7 34	12 0	4 52	7 11	11 53
21	Fr	☽	♍	4 29	7 34	morn	4 52	7 11	morn
22	Sat	☽	♍	4 29	7 34	21	4 53	7 11	22
23	Sun	☽	♍	4 29	7 35	38	4 53	7 11	46
24	M	☽	♎	4 29	7 35	1 4	4 53	7 12	1 18
25	Tu	☽	♎	4 30	7 35	1 26	4 54	7 12	1 48
26	W	☽	♏	4 30	7 35	1 55	4 54	7 12	2 22
27	Th	☽	♏	4 30	7 35	2 29	4 54	7 12	3 1
28	Fr	☽	♐	4 29	7 35	3 12	4 55	7 12	3 47
29	Sat	♋	♐	4 29	7 35	rises	4 55	7 12	rises
30	Sun	♋	♐	4 29	7 35	9 5	4 55	7 12	8 33

June is traced to Juno, the queen of heaven, who was thought to preside over marriages.

Twilight Begins

Day	Southern States	Northern States
1	3:25	1:55
16	3:21	1:40

Twilight Ends

Day	Southern States	Northern States
1	8:31	10:00
16	8:39	10:20

Day's Length

Day	Southern States	Northern States
1	13 h. 57 m.	15 h. 25 m.
11	14 h. 3 m.	15 h. 34 m.
21	14 h. 6 m.	15 h. 39 m.

The World's Calendar for Wheat Harvests

In June the harvest begins in Turkey, Spain, Southern France, California, Tennessee, Virginia, Kentucky, Kansas, Utah and Missouri.

The modern self-binder is found throughout France, also in Spain.

JUNE

If You Were Born in This Month (May 20 to June 21) you very likely have a dual nature. You are happy and unhappy, satisfied and dissatisfied at the same time. Learn to lean upon yourself, get rid of restlessness, and when you start in to do a thing, do it.

Antidotes for Poison

First—Send for a physician. Second—Induce vomiting by tickling throat with feather or finger; drinking hot water or strong mustard and water; swallow sweet oil or whites of eggs. Acids are antidotes for alkalies and vice versa.

For Poisoning From Opium, Laudanum, and Morphine—An emetic should be followed by strong coffee or the white of an egg. Keep the patient walking for two or three hours.

For Poisoning From Arsenic, Corrosive Sublimate, Verdigris, Blue Vitriol, and Vegetables Kept in Copper Kettles—Give an emetic and the white of an egg, sweet-oil and milk.

For Poisoning From Hemlock, Aconite, Belladonna, and Foxglove—After emetic give tannin and stimulants.

Strychnine—First give an emetic, and then large dose of bromide of sodium (60 grains in solution). Repeat every hour until three or four doses have been taken.

Toadstool Poisoning—Give emetics promptly, then castor oil and stimulants. Apply heat.

Poison Ivy or Oak—There are three generally effective remedies for poison ivy or mercury. One is to apply hot water to the poisoned surface. Another is peroxide of hydrogen. The third is to apply a solution of sugar of lead, about 40 grains to a pound of water. Two other remedies that are more or less effective are baking soda and dry starch.

First Aid to the Injured

Burns and Scalds—Cover with cooking soda and lay wet cloths over the injured part. Household ammonia applied immediately is excellent; also white of egg and olive oil; olive or linseed oil, plain or mixed with chalk and whiting; sweet or olive oil and lime water.

Lightning—Dash water over the person struck.

Sunstroke—Loosen clothing. Get the patient into the shade and apply ice-cold water to head. Keep head in elevated position.

Stings of Insects—Apply weak ammonia, oil, salt water, iodine.

Mad Dog or Snake Bite—Tie a cord tightly above wound. Suck the wound and cauterize with caustic or white-hot iron immediately or cut out adjoining parts with a sharp knife. Give whisky or brandy.

Fainting—Place flat on back. Allow fresh air to circulate, and sprinkle with water. Place head lower than rest of body.

Fire in One's Clothing—Don't run—especially not downstairs or out-of-doors. Roll on a carpet, or wrap in a woolen rug or blanket. Keep the head down, so as not to inhale flame.

Drowning—1. Loosen the clothing, if any. 2. Empty the lungs of water by laying the patient on his stomach, and lifting him by the middle, so that the head hangs down. Jerk the body a few times. 3. Pull tongue forward, using handkerchief, or pin with string, if necessary. 4. Imitate respiration by alternately compressing and expanding the lower ribs about twenty times a minute. Alternately raising and lowering the arms from the sides up above the head, gently but persistently, will stimulate the action of the lungs. 5. Apply warmth and friction to extremities. 6. By holding tongue forward, closing the nostrils, and pressing the "Adam's apple" back (so as to close entrance to stomach) direct inflation may be tried. Take a deep breath and breathe it forcibly into the mouth of patient, compressing the chest to expel the air. Repeat this operation. 7. Don't give up! People have been saved after hours of patient, active effort. 8. When breathing begins, get patient into a warm bed, give warm drinks, or spirits by teaspoonfuls. Let there be plenty of fresh air and quiet.

JULY

Moon's Phases	☽	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
☾ Last Quarter	7	0	47	11	47	10	47	9	47	8	47
● New Moon	14	9	13	8	13	7	13	6	13	5	13
☽ First Quarter	21	1	18	0	18	**11**	**18** 20th	**10**	**18** 20th	**9**	**18** 20th
○ Full Moon	28	0	28 29th	**11**	**28**	**10**	**28**	**9**	**28**	**8**	**28**

Day of Mo	Day of Wk.	Li. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.
1	M	○	♑	4 32	**7 35**	**9 38**	4 56	**7 12**	**9 11**
2	Tu	○	♑	4 32	**7 35**	**10 3**	4 56	**7 12**	**9 41**
3	W	○	♑	4 33	**7 34**	**10 27**	4 57	**7 12**	**10 11**
4	Th	○	♒	4 33	**7 34**	**10 47**	4 57	**7 12**	**10 37**
5	Fr	○	♒	4 34	**7 34**	**11 5**	4 58	**7 11**	**11 2**
6	Sat	○	♓	4 35	**7 34**	**11 24**	4 58	**7 11**	**11 27**
7	Sun	◐	♓	4 35	**7 33**	**11 43**	4 59	**7 11**	**11 53**
8	M	◐	♈	4 36	**7 33**	morn	4 59	**7 11**	morn
9	Tu	◐	♈	4 37	**7 33**	7	5 0	**7 11**	24
10	W	◐	♈	4 37	**7 32**	35	5 0	**7 10**	58
11	Th	◐	♉	4 38	**7 32**	1 13	5 1	**7 10**	1 43
12	Fr	◐	♉	4 39	**7 31**	2 0	5 1	**7 10**	2 35
13	Sat	◐	♊	4 39	**7 31**	3 3	5 2	**7 9**	3 39
14	Sun	●	♊	4 40	**7 30**	sets	5 3	**7 9**	sets
15	M	●	♋	4 41	**7 30**	**9 2**	5 3	**7 9**	**8 38**
16	Tu	●	♋	4 42	**7 29**	**9 35**	5 4	**7 8**	**9 18**
17	W	●	♌	4 43	**7 29**	**10 1**	5 4	**7 8**	**9 52**
18	Th	●	♌	4 44	**7 28**	**10 24**	5 5	**7 7**	**10 22**
19	Fr	●	♍	4 44	**7 27**	**10 45**	5 6	**7 7**	**10 51**
20	Sat	●	♍	4 45	**7 26**	**11 7**	5 6	**7 6**	**11 20**
21	Sun	◑	♎	4 46	**7 26**	**11 30**	5 7	**7 6**	**11 49**
22	M	◑	♎	4 47	**7 25**	**11 58**	5 8	**7 5**	morn
23	Tu	◑	♏	4 48	**7 24**	morn	5 8	**7 4**	24
24	W	◑	♏	4 48	**7 23**	29	5 9	**7 4**	1 1
25	Th	◑	♏	4 49	**7 23**	1 10	5 10	**7 3**	1 45
26	Fr	◑	♐	4 50	**7 22**	1 57	5 10	**7 3**	2 33
27	Sat	◑	♐	4 51	**7 21**	2 52	5 11	**7 2**	3 27
28	Sun	○	♑	4 52	**7 20**	rises	5 12	**7 1**	rises
29	M	○	♑	4 53	**7 19**	**8 9**	5 12	**7 0**	**7 45**
30	Tu	○	♑	4 54	**7 18**	**8 32**	5 13	**6 59**	**8 14**
31	W	○	♒	4 55	**7 17**	**8 51**	5 14	**6 59**	**8 40**

July was named in honor of Julius Caesar, who was born on the 12th of July.

Twilight Begins

Day	Southern States	Northern States
1	3:26	1:44
16	3:35	2:05

Twilight Ends

Day	Southern States	Northern States
1	8:42	10:22
16	8:36	10:25

Day's Length

Day	Southern States	Northern States
1	14 h. 4 m.	15 h. 35 m.
11	14 h. 8 m.	15 h. 24 m.
21	13 h. 50 m.	15 h. 6 m.

The World's Calendar for Wheat Harvests

July is the harvest season in Roumania, Austro-Hungary, Southern Russia, Germany, Switzerland, France, Southern England, Oregon, Nebraska, Southern Minnesota, Wisconsin, Colorado, Washington, Iowa, Illinois, Indiana, Michigan, Ohio, New York, New England and Eastern Canada.

JULY

If You Were Born in This Month (June 21 to July 22) you have a persistent will but lose heart easily. Seek education, and cultivate your many gifts. Pay less attention to display, and more attention to work. Respect the opinions of others.

Some Economic History of the Original Thirteen States

By Cyril G. Hopkins, Chief in Agronomy and Chemistry
Illinois Agricultural Experiment Station

"It was a beautiful country that we passed through, but the farms generally did not show prosperity. Many of the districts looked depopulated. We saw plenty of children in the villages, but few in the rural regions. The country looked deserted. In fact, interest in agriculture appears to have declined."

These statements were made by Secretary of Agriculture Wilson, in 1909, after having traveled through some of the Eastern states for the purpose of studying farming conditions.

Just fifty years before Baron von Liebig, the "Father of Agricultural Chemistry," wrote as follows of the same region:

"The deplorable effects of the spoliation system of farming are nowhere more strikingly evident than in America, where the early colonists in Canada, in the State of New York, in Pennsylvania, Virginia, Maryland, etc., found tracts of land, which for many years, by simply plowing and sowing, yielded a succession of abundant wheat and tobacco harvests. We all know what has become of those fields. In less than two generations, though originally teeming with fertility, they were turned into deserted wildernesses. The American farmer despoils his farm without the least attempt at method in the process. When it ceases to yield him sufficiently abundant crops, he simply quits it, and, with his seed and plants, betakes himself to a fresh farm; for there is plenty of good land to be had in America, and it would not be worth his while to work the same farm to absolute exhaustion."

These two statements are in harmony, and they are correct; they are supported by all authentic history of the general agriculture of the Eastern states and by the careful observations of modern travelers and investigators.

Meanwhile, Liebig's countrymen listened to his warning and applied his teaching, with the result that at the present time the average yield of wheat in Germany is 28 bushels per acre, compared with 14 bushels as the general average for the entire United States.

To be sure, there are numerous market gardens, truck farms, and dairy farms, near the large cities in the Eastern states, which have been built up to a high state of fertility by heavy applications of fertilizers and of manures made in part from the farm produce shipped in from the newer agricultural regions of the West; but the truth remains that, as an average, the vast areas of lands once used for general agriculture in the original thirteen states have been greatly reduced in productive power and in value.

The writer recently selected a gently undulating upland farm with a fine loam soil of excellent physical composition—as good a farm apparently as one would care to look upon—two miles from a station on one of America's greatest railways, and only fifteen miles from the District of Columbia; and it was purchased for $10 an acre.

Investigation showed that the actual elements of fertility had been reduced to about one-fifth of the amount contained in the newer lands of the Central West. The United States Department of Agriculture has made some extensive investigations of these lands during recent years, and reports that "This soil has been cultivated for upward of two hundred years, but is now little valued and is covered with oak and pine over much of its area." In another place the government report states that this land has been "allowed to grow up to scrub forests, so that large portions of it are at present uncleared. Such unimproved lands can be bought for from $1.50 to $5.00 an acre, even within a few miles of the District line."

The economic history of the original thirteen states may be written in few words: exhaustion of the soil, and the development of manufacture and commerce. And these conditions have resulted from one principal factor of influence:

(Continued on Page 30.)

AUGUST

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
☾ Last Quarter	5	0	18 6th	11	18	10	18	9	18	8	18
● New Moon	12	3	58	2	58	1	58	0	58	11	58
☽ First Quarter	19	0	57	11	57	10	57	9	57	8	57
○ Full Moon	27	3	59	2	59	1	59	0	59	11	59

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.
1	Th	♑	♒	4 56	7 16	9 11	5 14	6 58	9 5
2	Fr	♑	♓	4 57	7 14	9 28	5 15	6 57	9 29
3	Sat	♑	♓	4 58	7 13	9 47	5 16	6 56	9 54
4	Sun	♑	♓	4 59	7 12	10 8	5 16	6 55	10 22
5	M	♐	♈	5 0	7 10	10 34	5 17	6 54	10 55
6	Tu	♐	♈	5 1	7 9	11 6	5 18	6 53	11 33
7	W	♐	♉	5 2	7 7	11 46	5 18	6 52	morn
8	Th	♐	♉	5 3	7 6	morn	5 19	6 51	19
9	Fr	♐	♊	5 4	7 5	41	5 20	6 50	1 17
10	Sat	♐	♊	5 5	7 4	1 48	5 21	6 49	2 24
11	Sun	♐	♋	5 6	7 2	3 7	5 21	6 48	3 39
12	M	●	♋	5 7	7 1	sets	5 22	6 47	sets
13	Tu	●	♌	5 8	7 0	7 59	5 22	6 46	7 46
14	W	●	♌	5 9	6 58	8 24	5 23	6 45	8 19
15	Th	●	♍	5 10	6 57	8 48	5 24	6 44	8 50
16	Fr	●	♍	5 11	6 55	9 9	5 25	6 43	9 19
17	Sat	●	♎	5 12	6 54	9 31	5 25	6 42	9 49
18	Sun	●	♎	5 13	6 53	9 58	5 26	6 41	10 22
19	M	☽	♎	5 14	6 51	10 29	5 27	6 40	10 59
20	Tu	☽	♏	5 15	6 50	11 5	5 27	6 39	11 40
21	W	☽	♏	5 16	6 48	11 52	5 28	6 37	morn
22	Th	☽	♐	5 17	6 47	morn	5 29	6 36	29
23	Fr	☽	♐	5 17	6 45	45	5 29	6 35	1 21
24	Sat	☽	♐	5 18	6 44	1 46	5 30	6 34	2 19
25	Sun	☽	♑	5 19	6 42	2 50	5 31	6 33	3 18
26	M	☽	♑	5 20	6 41	3 53	5 31	6 31	4 16
27	Tu	♋	♒	5 21	6 39	rises	5 32	6 30	rises
28	W	♋	♒	5 22	6 37	7 17	5 33	6 29	7 10
29	Th	♋	♒	5 23	6 36	7 35	5 33	6 28	7 34
30	Fr	♋	♓	5 24	6 35	7 52	5 34	6 26	7 59
31	Sat	♋	♓	5 25	6 34	8 13	5 35	6 25	8 26

August was named in honor of Augustus Caesar, he having been made cousul in this month.

Twilight Begins

Day	Southern States	Northern States
1	3:49	2:35
16	4:01	3:02

Twilight Ends

Day	Southern States	Northern States
1	8:24	9:36
16	8:07	9:02

Day's Length

Day	Southern States	Northern States
1	13 h. 36 m.	14 h. 44 m.
11	13 h. 19 m.	14 h. 15 m.
21	13 h. 4 m.	13 h. 47 m.

The World's Calendar for Wheat Harvests

August is the harvest month in Holland, Belgium, Great Britain, Denmark, Poland, Western Canada and the Dakotas.

Western Canada has been called the "Bread Basket of the World."

AUGUST

If You Were Born in This Month (July 22 to August 22) you are magnetic, a power for good, and are able to inspire others. You like to plan better than you like to work. Keep your head cool, Do not borrow.

Some Economic History of the Original Thirteen States

(Continued from Page 28.)

The American statesmen, like the French Minister Colbert, have favored manufacture and commerce at the expense of the farm; and, as a result, the man of "gumption" has left the old farm at the very door of our greatest markets, and become a merchant or an artisan, or has gone west to seek new land, as Greely advised.

And yet, the earth and air contain abundance of the materials which if rightly used would have made the Eastern lands worth more than are those of the corn belt.

The Eastern farm lands were depleted because of the farmer's lack of knowledge. It was nearly ninety years after the Declaration of Independence that Colleges of Agriculture were first provided for; and another quarter of a century passed before the Agricultural Experiment Stations, the sources of definite agricultural knowledge, were established. Thus, it may be said truthfully that the initial step toward the development of a permanently successful agriculture in America began with the passage of the Hatch Act in 1887; and it is safe to say that more than 90 per cent of all the farm lands of the United States are still being depleted of their fertility.

If we consider the crop statistics of the United States Department of Agriculture for the twelve North-Central States, from Ohio to Kansas, and from Missouri to Canada, a comparison of two 20-year periods, from 1866 to 1905 (for which 10-year averages are reported in the last Year Book) reveals the fact that the average yield of wheat has increased only one-half bushel per acre, while the average yield of corn has decreased by two bushels per acre.

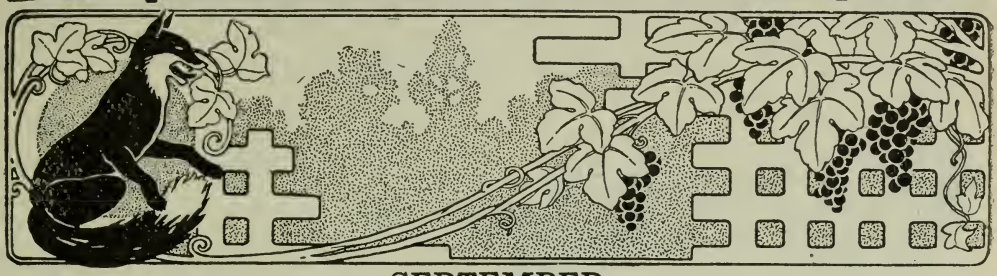
In striking contrast, the census returns show that the population of contiguous continental United States has increased from 38,000,000 in 1870 to 92,000,000 in 1910; and two-thirds of our total population, with perhaps an equal or greater proportion of political influence, now live in towns and cities.

In most states, the agricultural colleges and experiment stations are still very inadequately supported. Some states, Illinois for instance, are fast becoming marked exceptions to this rule. It is an encouraging fact that since 1901, when the state of Illinois first began to provide liberal support for agricultural investigation and instruction, the Illinois ten-year average yield of corn has been increased by six bushels per acre, and the average yield of wheat by three bushels per acre above the average yields before the results of definite and wide-spread investigations began to influence the agricultural practice of the state, about 1890. (The Government Crop statistics and those of the State Board of Agriculture are in close agreement in showing these increases in yield for Illinois.)

Whether the opening of the vast areas of Canadian lands will cause the present grain belt of the United States to repeat the agricultural history of the original thirteen states remains to be determined. It must be granted, however, that if the prices for farm products are forced to too low a level, in comparison with the cost of labor and other essentials, then the farmer is forced to deplete his soil; for reduction in expenses, and not increase in yield per acre, must be depended upon to compensate for low prices.

On the other hand, with moderate prices for farm products and with the application of science to agriculture, it will be possible to write another chapter in the economic history of the Eastern states, which shall include the profitable restoration to more than virgin fertility of the millions of acres of beautiful farm lands which now lie depleted or agriculturally abandoned, from Plymouth Rock to St. Augustine.

For more complete information concerning soil fertility, the reader is advised to procure I H C literature on spreaders and for an easy introduction to the general subject of soil restoration, improvement, and maintenance, he is referred to "The Story of the Soil," published by the Gorham Press, Boston, Mass.



SEPTEMBER

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
☾ Last Quarter	4	9	23	8	23	7	23	6	23	5	23
● New Moon	10	11	48	10	48	9	48	8	48	7	48
☽ First Quarter	18	3	55	2	55	1	55	0	55	11	55 17th
○ Full Moon	26	7	34	6	34	5	34	4	34	3	34

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M.
1	Sun	●	♈	5 26	6 33	8 36	5 35	6 24	8 55
2	M	●	♈	5 27	6 31	9 4	5 36	6 23	9 30
3	Tu	●	♌	5 28	6 29	9 41	5 37	6 21	10 12
4	W	☾	♌	5 29	6 28	10 28	5 37	6 20	11 4
5	Th	☾	♊	5 30	6 26	11 28	5 38	6 19	morn
6	Fri	☾	♊	5 31	6 25	morn	5 39	6 17	5
7	Sat	☾	♋	5 32	6 23	41	5 39	6 16	1 15
8	Sun	☾	♋	5 33	6 21	2 0	5 40	6 15	2 28
9	M	☾	♌	5 34	6 20	3 20	5 40	6 13	3 42
10	Tu	●	♌	5 35	6 18	4 43	5 41	6 12	4 56
11	W	●	♍	5 36	6 16	sets	5 42	6 11	sets
12	Th	●	♍	5 37	6 15	7 9	5 42	6 9	7 15
13	Fr	●	♍	5 38	6 13	7 32	5 43	6 8	7 45
14	Sat	●	♎	5 39	6 11	7 57	5 43	6 6	8 19
15	Sun	●	♎	5 40	6 9	8 26	5 44	6 5	8 54
16	M	●	♏	5 41	6 8	9 2	5 45	6 4	9 35
17	Tu	●	♏	5 42	6 6	9 45	5 46	6 3	10 21
18	W	☽	♐	5 43	6 4	10 37	5 46	6 1	11 [illegible]
19	Th	☽	♐	5 44	6 3	11 35	5 47	6 0	morn
20	Fr	☽	♐	5 45	6 1	morn	5 48	5 58	10
21	Sat	☽	♑	5 46	5 59	37	5 48	5 57	1 8
22	Sun	☽	♑	5 47	5 58	1 43	5 49	5 56	2 8
23	M	☽	♒	5 48	5 56	2 47	5 50	5 54	3 6
24	Tu	☽	♒	5 49	5 54	3 51	5 50	5 53	4 4
25	W	☽	♒	5 50	5 53	4 54	5 51	5 52	5 1
26	Th	○	♓	5 51	5 52	rises	5 52	5 50	rises
27	Fr	○	♓	5 52	5 50	6 19	5 52	5 49	6 30
28	Sat	○	♈	5 53	5 48	6 41	5 53	5 48	6 58
29	Sun	○	♈	5 54	5 46	7 9	5 54	5 46	7 32
30	M	○	♉	5 54	5 44	7 43	5 55	5 46	8 13

September was named from *Septem* (seventh), as it was the seventh Roman month.

Twilight Begins

Day	Southern States	Northern States
1	4:14	3:13
16	4:25	3:57

Twilight Ends

Day	Southern States	Northern States
1	7:46	8:35
16	7:27	7:52

Day's Length

Day	Southern States	Northern States
1	12 h. 47 m.	13 h. 17 m.
11	12 h. 29 m.	12 h. 46 m.
21	12 h. 11 m.	12 h. 15 m.

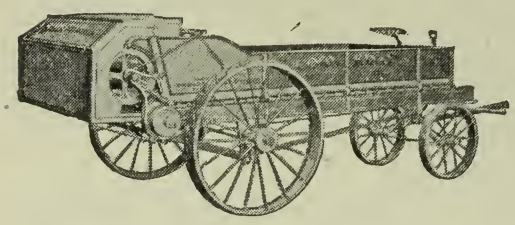
The World's Calendar for Wheat Harvests

In September harvest is on in Scotland, Sweden, Norway, Northern Russia and Siberia, and continues into October.

SEPTEMBER

If You Were Born in This Month (August 22 to September 23) you are orderly and methodical, guard well all secrets, and have great endurance and aptitude. Do not criticise the faults of others, do not meddle, and never dope yourself with drugs. Careful living will preserve your youthful appearance.

Uses of Lime and Phosphorus



Manure Spreader, Lime Hood Attachment

Where barnyard manure is produced in insufficient quantities, commercial fertilizers can sometimes be used to advantage. This is especially true of phosphorus and lime. In using lime, caution should be taken to determine the element lacking in the soil. Probably the surest indication of acidity in the soil is the presence of the weed known as "horse sorrel." Another test is to pack a piece of litmus paper in a handful of soil. If the litmus turns pinkish or reddish color, acid is present. To correct soil acidity, finely ground limestone should be used. Never use caustic or quicklime if ground limestone can be procured. If it is impossible to secure ground limestone, a limited amount of air or waterslacked lime may be used.

Care, however, should be taken in applying. Lime should seldom be applied in connection with barnyard manure, because it hastens the decay of the vegetable matter and reduces the humus of the soil. For this reason, if both barnyard manure and lime are to be applied, apply the ground lime first, plow it under, then use the manure as a top dressing.

Quantity to Use—Various authorities advise the use of different quantities, but this difference has resulted largely from the fact that each authority performed experiments under dissimilar conditions. Difference in locality and nature of the land to a large extent determine the amount of ground limestone to use. In most cases two tons are sufficient to produce satisfactory results. Under exceptional conditions, as high as five tons can be used without detrimental effects.

Phosphorus—Phosphorus is probably the only element that it is ever necessary for the average farmer to purchase. This is not surprising when it is considered that for every 50 bushels of wheat threshed, 16 pounds of phosphorus is taken from the soil. For every 100 bushels of corn grown, 23 pounds of phosphorus is required; for every 100 bushels of oats, 16 pounds of phosphorus is needed. Alfalfa requires 36 pounds of phosphorus for every 8 tons of hay produced. A cotton crop consisting of 1,000 pounds of cotton lint, 2,000 pounds seed, 4,000 pounds stalks, requires 29.4 pounds of phosphorus. When one stops to consider that it is an especially good soil that contains over 1,200 pounds of phosphorus in an acre of soil, plowed to the depth of 6⅔-inches, it is easy to figure how soon it becomes necessary to furnish this element. Barnyard manure contains this element in appreciable quantities; in fact, about 75 per cent of the phosphorus contained in vegetable matter consumed by live stock can be returned to the soil in the form of manure. Where phosphorus is deficient, it must be supplied.

Acid Phosphate—If immediate results are desired, it is probably better to use acid phosphate because the phosphorus which is required for nourishment of the growing plants is in a form that is more readily available. For cumulative effect, ground rock phosphate is most economical to use. In using phosphate, it can be applied best by mixing it with ordinary barnyard manure. Under no circumstances should the compost be spread by hand, because loss will result if the mixture is not distributed evenly, in proper quantities.

For spreading a compound of barnyard manure and phosphate, a spreader should be used. By using a spreader, the mixture can be spread evenly, and thin enough so that the phosphate will produce the desired result at a financial gain.

OCTOBER

Moon's Phases	D.	Intercol. T. H.	Intercol. T. M.	Eastern T. H.	Eastern T. M.	Central T. H.	Central T. M.	Mountain T. H.	Mountain T. M.	Pacific T. H.	Pacific T. M.
☾ Last Quarter	3	4	43	3	48	2	48	1	48	0	48
● New Moon	10	9	41	8	41	7	41	6	41	5	41
☽ First Quarter	17	10	6	9	6	8	6	7	6	6	6
○ Full Moon	25	10	30	9	30	8	30	7	30	6	30

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon R. & S. H. M.	Soutnern States Sun Rises H. M.	Sun Sets H. M.	Moon R. & S. H. M.
1	Tu	●	♉	5 56	5 43	8 28	5 55	5 45	9 0
2	W	●	♉	5 57	5 41	9 20	5 56	5 43	9 57
3	Th	☾	♊	5 58	5 39	10 26	5 56	5 41	11 1
4	Fr	☾	♊	5 59	5 38	11 41	5 57	5 40	morn
5	Sat	☾	♋	6 0	5 36	morn	5 58	5 39	12
6	Sun	☾	♋	6 1	5 35	59	5 58	5 37	1 23
7	M	☾	♌	6 2	5 33	2 18	5 59	5 36	2 34
8	Tu	☾	♌	6 3	5 31	3 35	6 0	5 35	3 44
9	W	☾	♍	6 4	5 30	4 51	6 1	5 33	4 52
10	Th	●	♍	6 5	5 28	6 5	6 1	5 32	5 59
11	Fr	●	♎	6 7	5 27	sets	6 2	5 31	sets
12	Sat	●	♎	6 8	5 25	6 22	6 3	5 30	6 47
13	Sun	●	♏	6 9	5 23	6 57	6 4	5 29	7 28
14	M	●	♏	6 10	5 22	7 37	6 4	5 27	8 12
15	Tu	●	♏	6 11	5 20	8 27	6 5	5 26	9 4
16	W	●	♐	6 12	5 19	9 23	6 6	5 25	9 59
17	Th	☽	♐	6 13	5 17	10 25	6 7	5 24	10 57
18	Fr	☽	♑	6 14	5 16	11 29	6 7	5 23	11 56
19	Sat	☽	♑	6 15	5 14	morn	6 8	5 22	morn
20	Sun	☽	♑	6 16	5 13	34	6 9	5 20	56
21	M	☽	♒	6 18	5 12	1 38	6 10	5 19	1 53
22	Tu	☽	♒	6 19	5 10	2 41	6 11	5 18	2 50
23	W	☽	♓	6 20	5 9	3 45	6 11	5 17	3 47
24	Th	☽	♓	6 21	5 7	4 48	6 12	5 16	4 44
25	Fr	○	♈	6 22	5 6	5 54	6 13	5 15	5 43
26	Sat	○	♈	6 23	5 4	rises	6 14	5 14	rises
27	Sun	○	♈	6 24	5 3	5 42	6 15	5 13	6 10
28	M	○	♉	6 26	5 2	6 23	6 16	5 12	6 57
29	Tu	○	♉	6 27	5 1	7 14	6 16	5 11	7 51
30	W	○	♊	6 28	4 59	8 18	6 17	5 10	8 54
31	Th	○	♊	6 29	4 58	9 30	6 18	5 10	10 2

October was formerly the eighth month, and hence it was named from *Octo* (eight).

Twilight Begins

Day	Southern States	Northern States
1	4:33	4:20
16	4:42	4:38

Twilight Ends

Day	Southern States	Northern States
1	7:06	7:20
16	6:48	6:52

Day's Length

Day	Southern States	Northern States
1	11 h. 54 m.	11 h. 44 m.
11	11 h. 35 m.	11 h. 14 m.
21	11 h. 18 m.	10 h. 43 m.

The World's Calendar for Wheat Harvests

The harvest which began in September is continued during October throughout Sweden, Norway, and Northern Russia.

In these countries a large part of the harvesting work is done by women.

OCTOBER

If You Were Born in This Month (September 23 to October 23) you are filled with hope and enthusiasm, and disaster does not put you down. Do not scatter your forces, be more conservative, concentrate, and follow your own inclinations. Patience is necessary to your success.

There is One Crop That Does Not Belong to You

It belongs to the land. When the soil gives you the grain, the corn, and the hay crops to sell or feed and take your profit, it gives you all that you are entitled to. The manure crop, the second crop, is not yours to waste or sell—it belongs to the land from whence it came. It is the balance due to the land. It is the means which nature provided for maintaining the fertility of the soil.

Your duty is to conserve every ton of manure produced on your farm and to return it to the soil in a way which will best bring about the conservation and increase of fertility. If you return it by the fork method you are doing only half your duty, because half of the manure is wasted in leaching and evaporation and excessive fertilization.

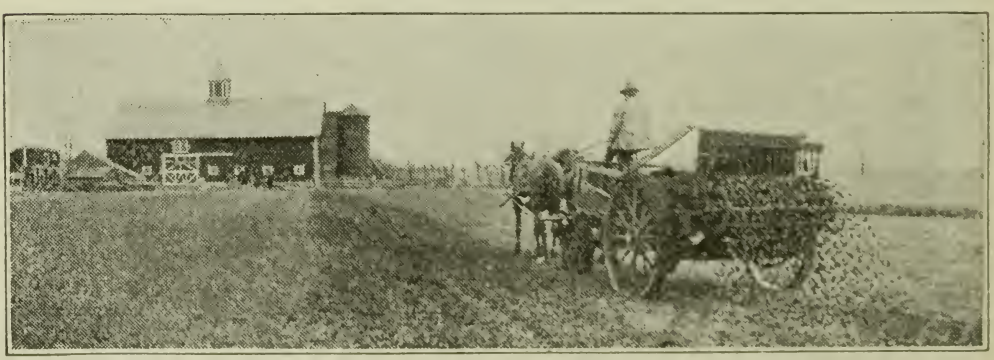
This is not treating the soil right. It is not handling the manure right. The right way is to spread the manure evenly over the soil in the proper quantities, so that every ounce of manure can do its share toward restoring the fertility which the original crop took from the soil. This way is the manure spreader way. It is the only way the work can be properly done.

We would suggest the use of an I H C — Kemp, Corn King, or Cloverleaf — spreader. First, because thousands of farmers throughout the land have told us that their I H C spreaders do more work and do it more easily, more quickly, and better than any other spreader they ever saw; second, because we know that these spreaders will outlast and outwork any other spreader. We have made it our business to find out what other spreaders will do. The result is that in the I H C we have a spreader which we know will do more than any other spreader on the market.

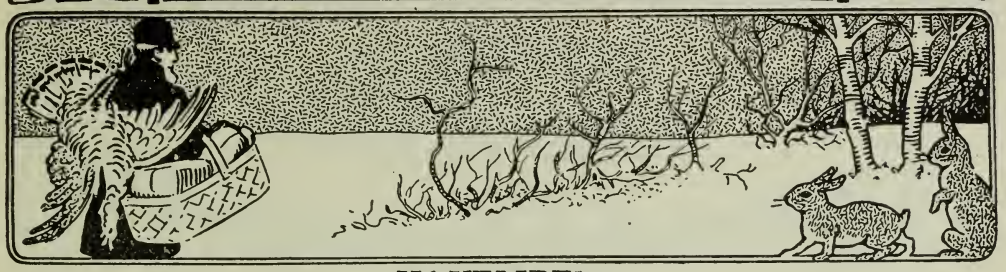
You are going to buy a spreader, that is a certainty; and we hope you will buy an I H C.

Corn King and Kemp spreaders are return apron types; the Cloverleaf is an endless apron machine; each style is made in several sizes—from small, narrow spreaders for vineyards and gardens and small farms to large machines for big farms and ranches.

You will find I H C spreader catalogues very interesting. They not only describe the machines fully, but they give you the opinions of the world's greatest soil experts. A copy may be had upon application to the I H C local dealer or to the general offices at Chicago.



An I H C Spreader on an Eastern Farm



NOVEMBER

Moon's Phases	D.	Intercol. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
☾ Last Quarter	1	11	37	10	37	9	37	8	37	7	37
● New Moon	8	10	5	9	5	8	5	7	5	6	5
☽ First Quarter	16	6	43	5	43	4	43	3	43	2	43
○ Full Moon	24	0	12	11	12	10	12	9	12	8	12

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Fl.	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M	Moon R.& S. H. M	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon R.& S. H. M
1	Fr	☾	♋	6 30	4 57	10 46	6 19	5 9	11 13
2	Sat	☾	♋	6 31	4 56	morn	6 20	5 8	morn
3	Sun	☾	♌	6 32	4 54	2	6 21	5 7	21
4	M	☾	♌	6 34	4 53	1 19	6 22	5 6	1 30
5	Tu	☾	♍	6 35	4 52	2 32	6 23	5 5	2 36
6	W	☾	♍	6 36	4 51	3 45	6 23	5 4	3 42
7	Th	☾	♎	6 37	4 50	4 59	6 24	5 4	4 48
8	Fr	●	♎	6 38	4 49	6 11	6 25	5 3	5 53
9	Sat	●	♎	6 40	4 48	sets	6 26	5 2	sets
10	Sun	●	♏	6 41	4 47	5 31	6 27	5 2	6 4
11	M	●	♏	6 42	4 46	6 17	6 28	5 1	6 52
12	Tu	●	♐	6 43	4 45	7 11	6 29	5 0	7 46
13	W	●	♐	6 44	4 44	8 11	6 30	5 0	8 45
14	Th	●	♑	6 46	4 43	9 16	6 31	4 59	9 55
15	Fr	●	♑	6 47	4 42	10 21	6 31	4 58	10 44
16	Sat	☽	♑	6 48	4 41	11 24	6 32	4 58	11 42
17	Sun	☽	♒	6 49	4 40	morn	6 33	4 57	morn
18	M	☽	♒	6 50	4 39	28	6 34	4 57	39
19	Tu	☽	♓	6 51	4 38	1 34	6 35	4 57	1 39
20	W	☽	♓	6 53	4 38	2 32	6 36	4 56	2 30
21	Th	☽	♓	6 54	4 37	3 36	6 37	4 56	3 28
22	Fr	☽	♈	6 55	4 36	4 42	6 38	4 55	4 28
23	Sat	☽	♈	6 56	4 36	5 54	6 39	4 55	5 32
24	Sun	○	♉	6 57	4 35	rises	6 40	4 55	rises
25	M	○	♉	6 58	4 35	5 7	6 41	4 55	5 42
26	Tu	○	♊	6 59	4 35	6 9	6 41	4 54	6 45
27	W	○	♊	7 0	4 34	7 19	6 42	4 54	7 53
28	Th	○	♋	7 2	4 34	8 36	6 43	4 54	9 4
29	Fr	○	♋	7 3	4 34	9 53	6 44	4 54	10 14
30	Sat	○	♌	7 4	4 34	11 8	6 45	4 54	11 22

November was named from *Novem* (nine), as it was formerly the ninth month.

Twilight Begins

Day	Southern States	Northern States
1	4:52	4:58
16	5:03	5:25

Twilight Ends

Day	Southern States	Northern States
1	6:34	6:28
16	6:26	6:21

Day's Length

Day	Southern States	Northern States
1	10 h. 59 m.	10 h. 9 m.
11	10 h. 46 m.	9 h. 42 m.
21	10 h. 32 m.	9 h. 20 m.

The World's Calendar for Wheat Harvests

November is the harvest month in Peru and South Africa.

The American made machines are often drawn by a long-necked animal called the llama, the only animal domesticated by the South American Indians.

NOVEMBER

If You Were Born in This Month (October 23 to November 22) you are well poised, cool, and sure. You think well of yourself, and are not curious about the affairs of others. Curb anger, jealousy, and passion, be true to your friends, and you can succeed in almost anything.

Analysis of Manures

Kind of Manure	Per Cent Water	Pounds per Ton				Value per Ton
		Nitrogen	Phosphorus	Potash	Dry Matter	
Fresh Barnyard Manure	75	10	2	8	500	$1.98
*Rotted Barnyard Manure	75	10	3	8	500	2.04
Fresh Horse Manure	67	11.5	2.4	9.6	660	2.30
Fresh Hog Manure	77	16	8	6	460	3.29
Fresh Sheep Manure	30	28	8	19	1400	5.62
Fresh Cow Manure	77	8.4	5.8	8.8	450	2.01
Fresh Chicken Manure	57.5	27.22	10.6	11.6	840	5.35

*It requires two tons of fresh manure to make one ton of rotted manure.

Comparison of Yields From Application of Fresh and Rotted Manure

Yields per acre in bushels.

The Maryland Agricultural Experiment Station in Bulletin No. 122, entitled "Stable Manures," proves conclusively that fresh manure is more valuable than rotted manure; also, that when applied as a top dressing, manure is far more effective as a fertilizing agent than when plowed under.

	*Corn Bushels	‡Wheat Bushels
Unmanured	38.1	16.1
Fresh manure	70.7	19.7
Rotted manure	65.1	19.1
Gain from fresh manure	32.6	3.6
Gain from rotted manure	27.6	3.0
Gain of fresh over rotted manure	5.0	0.6

*Average of four crops. ‡Average of two crops.

Results of Applying Fresh and Rotted Manure Before and After Plowing

Yields per acre

	FRESH MANURE				ROTTED MANURE			
	Corn*		Wheat		Corn		Wheat‡	
	Grain Bu.	Fodder Lbs.	Grain Bu.	Straw Lbs.	Grain Bu.	Fodder Lbs.	Grain Bu.	Straw Lbs.
Before plowing	87.2	6950	20.3	1080	82.3	6550	19.8	760
After plowing	98.1	7500	22.3	1160	82.6	6450	20.7	960
Gain from using Manure as a top dressing	10.9	550	2.0	80	0.3	100	0.9	200

*Average of two crops. ‡Average of one crop.

Plant Food Removed From Each Acre by Various Farm Crops

Crops	Weight per Acre Pounds	Nitrogen Pounds	Phosphoric Acid Pounds	Potash Pounds	Lime Pounds
Wheat, 20 bushels	1,200	25	12.5	7	1
Straw	2,000	10	7.5	28	7
Total	.....	35	20	35	8
Barley, 40 bushels	1,920	28	15	8	1
Straw	3,000	12	5	30	8
Total	.....	40	20	38	9
Oats, 50 bushels	1,600	35	12	10	1.5
Straw	3,000	15	6	35	9.5
Total	.....	50	18	45	11
Corn, 65 bushels	2,200	40	18	15	1
Stalks	3,000	35	2	45	11
Total	.....	75	20	60	12
Meadow hay, 1 ton	2,000	30	20	45	12
Red clover hay, 2 tons	4,000	.....	28	66	75

DECEMBER

Moon's Phases	D.	Intercol. T. H.	M.		Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
☾ Last Quarter	1	7	5		6	5	5	5	4	5	3	5
● New Moon	8	1	7		0	7	11	7	10	7	9	7
☽ First Quarter	16	4	6		3	6	2	6	1	6	0	6
○ Full Moon	23	0	30	24th	11	30	10	30	9	30	8	30
☾ Last Quarter	30	4	12		3	12	2	12	1	12	0	12

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES Northern States Sun Rises H.	M.	Sun Sets H.	M.	Moon R. & S. H.	M.	Southern States Sun Rises H.	M.	Sun Sets H.	M.	Moon R. & S. H.	M.
1	Sun	☾	♌	7	5	4	34	morn		6	46	4	54	morn	
2	M	☾	♌	7	6	4	33	21		6	47	4	54	28	
3	Tu	☾	♍	7	7	4	33	1	33	6	47	4	54	1	32
4	W	☾	♍	7	8	4	33	2	45	6	48	4	54	2	37
5	Th	☾	♎	7	9	4	32	3	56	6	49	4	54	3	41
6	Fr	☾	♎	7	10	4	32	5	9	6	50	4	54	4	47
7	Sat	☾	♏	7	11	4	32	6	22	6	51	4	54	5	53
8	Sun	●	♏	7	12	4	32	7	31	6	51	4	54	6	57
9	M	●	♐	7	13	4	32	sets		6	52	4	54	sets	
10	Tu	●	♐	7	14	4	32	5	59	6	53	4	55	6	34
11	W	●	♐	7	15	4	32	7	1	6	53	4	55	7	33
12	Th	●	♑	7	15	4	32	8	7	6	54	4	56	8	33
13	Fr	●	♑	7	16	4	33	9	11	6	55	4	56	9	31
14	Sat	●	♒	7	16	4	33	10	15	6	55	4	56	10	29
15	Sun	●	♒	7	17	4	33	11	16	6	56	4	56	11	23
16	M	☽	♒	7	18	4	33	morn		6	57	4	57	morn	
17	Tu	☽	♓	7	18	4	33	17		6	57	4	57	19	
18	W	☽	♓	7	19	4	34	1	19	6	58	4	57	1	14
19	Th	☽	♈	7	20	4	34	2	24	6	58	4	58	2	12
20	Fr	☽	♈	7	20	4	35	3	32	6	59	4	58	3	14
21	Sat	☽	♉	7	21	4	35	4	43	6	59	4	59	4	17
22	Sun	☽	♉	7	21	4	36	5	58	7	0	4	59	5	27
23	M	○	♉	7	22	4	37	rises		7	0	5	0	rises	
24	Tu	○	♊	7	22	4	37	5	38	7	1	5	0	6	13
25	W	○	♊	7	23	4	38	6	17	7	1	5	1	6	48
26	Th	○	♋	7	23	4	39	7	37	7	1	5	1	8	0
27	Fr	○	♋	7	23	4	39	8	56	7	2	5	2	9	12
28	Sat	○	♌	7	23	4	40	10	13	7	2	5	3	10	21
29	Sun	○	♌	7	24	4	40	11	25	7	3	5	3	11	26
30	M	☾	♍	7	24	4	41	morn		7	3	5	4	morn	
31	Tu	☾	♍	7	24	4	42	33		7	3	5	5	27	

December was named from *Decem* (ten), the Roman Calendar terming it the tenth month.

Twilight Begins

Day	Southern States	Northern States
1	5:14	5:32
16	5:24	5:46

Twilight Ends

Day	Southern States	Northern States
1	6:23	6:03
16	6:28	6:04

Day's Length

Day	Southern States	Northern States
1	10 h. 24 m.	9 h. 1 m.
11	10 h. 16 m.	8 h. 51 m.
21	10 h. 14 m.	8 h. 46 m.

The World's Calendar for Wheat Harvests

In December the harvest season begins in the Argentine Republic, Uruguay and Australia.

The Argentine harvest is continued well into the month of January.

DECEMBER

If You Were Born in This Month (November 22 to December 21) you usually aim well and hit the mark in all matters. You are enterprising, farseeing, and do your best work under pressure. Very often you are misunderstood, so have few confidential friends.

Seed Testing

By Stephen D. van Benthuysen
Dakota Wesleyan University

When to Test Seed—The old time farmer never tested his seed, but depended almost entirely upon selection alone. Usually, he was wise enough to select his seed early in the fall before the frost had fallen to damage the germ. But the modern farmer, who must pay a good price for the rent of his land, who must have improved machinery and the use of high-priced horses, knows that he must use methods that will bring the largest returns from the field, and must observe proper selective and testing methods before planting. Thus, the up-to-date farmer will test all of his seed, whether small grain or corn, planting a sufficient number of seeds of small grain in a box to make sure of the germinating power. Be sure to count the number of seeds sown and thus determine the per cent of germination. Seed testing would best be done in the month of February or March. If it is corn, the farmer tests each ear before shelling it, and marks the ear as well as the grains taken from the ear, with corresponding numbers so that he will know which ears to eliminate before the planting.

Importance of Seed Testing—It is not an uncommon thing, even at this time, when our modern agriculture ought to be developed to its highest efficiency, to find a farmer who will excuse the poor stand of corn in his field by charging it up to robber birds, or to rotting in the ground, or to cut worms, when in reality the seed was not tested to find out if it had strong germination. Often farmers will excuse themselves upon the basis that selection is good enough, and that it takes time to test seed corn.

An Economic Waste—But that same farmer who argues in this way and who has but 60 per cent of a stand of corn will plow from half past two o'clock p. m. every day until supper time, or two fifths of his time, during the long hot days of the summer months, getting no returns whatever for his labor, for feeding his team, or for the wear and tear upon his machinery, and pay rent on land, from four-tenths of every acre of which he gets no returns—simply because he has failed to test his seed. Possibly he does not even realize that he has but 60 per cent of a crop.

Testing Reveals Weak or Strong Germination—Another thing that seed testing determines, and particularly is this true of corn testing, is that ears will often be found that look well on the outside and have a good general appearance, but will be found to be low in vitality or entirely without germ life. An ear that is low in vitality will probably produce nubbins, or broken stalks. Then, again, seed testing will reveal the fact that some ears will produce a very long, abnormal growth in both the root and the culm in the seven or eight days that it takes for a complete germination. By a careful study of such kernels one can soon determine the ears that will likely produce what is known in agronomy as "sports." These stalks will have a showy appearance in the field; i. e., they will be tall and strong during the season of cultivation but they will be found to be barren at gathering time. Moreover, the important thing that seed testing will reveal will be the strong germinating qualities of some of the ears. These are the ones to plant. The ears that are found not to germinate or that are low in vitality, of course should be eliminated.

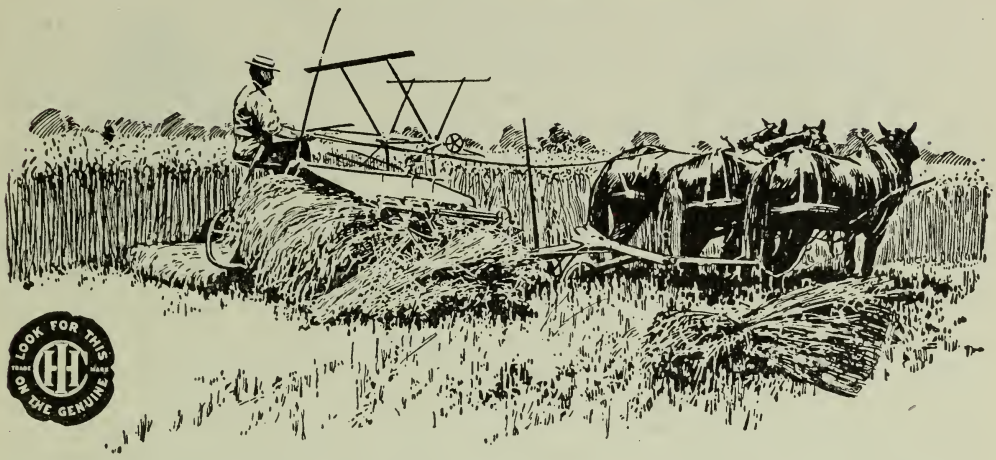
How to Test Seed Corn

Methods of Testing—Various kinds of seed testing machines are offered upon the market and the farmer having much testing to do might profit by the purchase of a machine, but the following is a simple and inexpensive method.

Box, Sawdust, and Cloths—Take a box two feet by three feet and about three and one-half or four inches deep. Get some good clean sawdust from

[Continued on page 40]

HARVEST FORESIGHT



The most important part of the year's work is the harvest. Proper fore sight in planning the harvest simply means thinking about it in ample time to prepare for it, and then preparing for it by purchasing the new equipment which you may need.

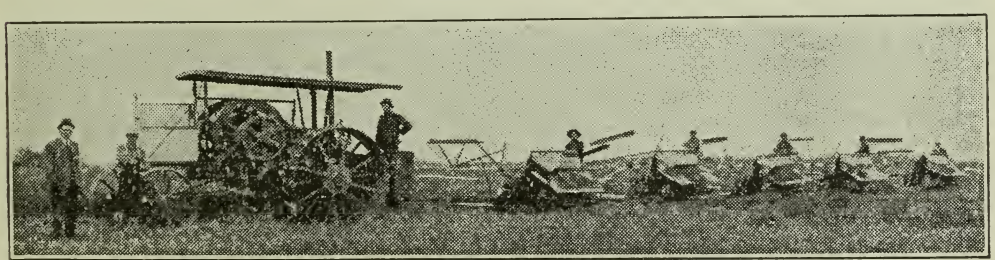
The foresight which has made the American farmer the most progressive and most prosperous in all the world prompts him to select I H C harvesting machines. Farmers know that these machines are right—the test of time has proved it. Their work in millions of harvest fields throughout the world proves that the confidence which farmers have in them is not misplaced.

CHAMPION	DEERING	McCORMICK
MILWAUKEE	OSBORNE	PLANO

All six of these harvesting machines are uniform in quality—each the best that long experience, correct principles, high-grade materials, and skilled workmanship can produce. With any I H C harvesting machine you can be sure of your harvest and your profits. Don't forget that in addition to binders, reapers, headers, and header-binders, these lines also include haying machines and tools—sulky rakes, sweep rakes, hay stackers, side-delivery rakes, and hay loaders.

The foresight which prompts farmers to select these harvesting machines also prompts them to select I H C binder twine to use with their I H C binder. You will find that the I H C brands—Champion, Deering, McCormick, Milwaukee, Osborne, Plano, or International—in sisal, standard, manila, or pure manila are absolutely dependable.

If you wish the points of any of these machines explained to you, call on the I H C local dealer, or, if that is not convenient, mail a request for any special information you desire to the general office in Chicago.



I H C 25-H. P. Tractor Pulling Five I H C Binders in a Flax Field on the Farm of John Archie McDonald, Ft. Qu'Appelle, Sask

Seed Testing (Continued)

the drug store or the meat market—sawdust is inexpensive and always clean—wet the sawdust and put about 2½ inches of sawdust in the box, leveling it down. Get some heavy cheese cloth or a good piece of muslin and cut out two pieces exactly the same size as the box. Take one of these pieces, and mark it out in enough squares to take about one hundred ears or one bushel of corn. Number these squares from one to one hundred, place the cloth upon the sawdust and make it wet.

The Seed Board—Now, take a long board and bore one hundred holes in it. The board should be about 14 inches wide and about 8 feet long. There should be four rows of holes put in the board. These should be bored with a small drill bit. The drill should be just large enough that spike nails will drive easily. Number all the spikes in the board. Take each one of the ears of corn to be tested. With a knife take two kernels out of the tip; turn the ear slightly, and take two kernels out of the middle; turn again one-half around and take two kernels out of the butt. Place these six kernels in square number one and put the ear upon spike number one. Proceed in this manner until each square on the cloth has six kernels upon it and see that the numbers of the squares correspond with the numbers of the spikes upon the board.

Covering the Top Cloth—Take the extra cloth and wet it and put it upon the top of the kernels, being careful not to knock them off the plot. Now fill in with about one inch of wet sawdust. Set the box in a warm place or a window toward the sun, where there is a uniform heat and water every day to keep moist. At the end of seven or eight days examine the corn and eliminate from the seed pile the ears that fail to germinate or any ear that has even two kernels which fail to germinate.

Care of Seed Corn—When corn has been gathered for seed, whether before or after testing, it should be placed in a good dry place—the barn loft, or the attic of the house. The cellar as a place for seed corn should be avoided. Any damp place where the seed is likely to gather mold should be avoided. A good dry place should always be selected in fact no place is too good for the farmer to keep that which is to produce l.. next season's crop.

For the Breeding Plot—If a breeding plot of ground is to be made in some isolated place away from other corn the best type of ears with strong germinating qualities should be selected for the breeding plot. In this manner—first by testing properly, and second by planting the best and following out the principle of either the hooding method or detasseling, the farmer can build up and decidedly improve the grade of his corn.

Putting Quality Into the Crop of Corn—At the Chicago Corn Show three years ago, the prize for the best ear of corn was awarded to a man from Indiana. It is the practice in exhibits of this kind, where the policy of giving prizes prevails, that the grain so exhibited goes over to the association as its property. After the Chicago Corn Show was over all corn was sold at public auction and the prize ear brought $250 and was bought by the man who produced it. When it was finally knocked off to him at that figure amid the wild cheers of the crowd he was called to the platform. His speech was brief but his words told the story when he said, "Men, I could not let that ear pass from my possession, for it represents twenty years of my life." Thus the farmer who puts his soul life into the product of his fields is making a contribution to humanity of an untold economic significance and is filling the ideal place as America's true husbandman.

Sometimes the most costly dollar we put into our pocket is the one we failed to spend.

CARING FOR FARM MACHINES AND WAGONS

TRADE MARK

REG. U. S. PAT. OFF. DEC. 14, 1909

A little care, a little paint, a little oil, will make a tool wear long, lack of these may destroy it within a year. The writer has a windmill that has run almost night and day for nearly 20 years with no repairs worth mentioning. The secret? Oil—oil often and abundant. Neighbors have worn out two or three windmills in the same time, and had the trouble of replacing them.

One man will take a mower, reaper, binder, or a wagon, and use it nearly a lifetime. Another man will destroy such a machine in a few seasons, or even in a few months. Care, or, neglect.

A few hints: Have handy a good wrench. Keep nuts tight—go over them before they are known to be loose. Don't tighten too much—just what the taps will bear nicely. Machines hold together better with the taps on.

Wagons go to pieces through neglect. Clean them, go over the running gears once or twice a year with hot linseed oil, filling all incipient cracks with it, especially around each spoke. Occasionally give a coat of paint. The oil however, is better for the hurried farmer than paint; he can go all over the clean running gears of a wagon in two hours, or less time, and the cost of the material will be very little. It will make that wagon look like new, keep out moisture, prevent checking and decay.

When the season is over, you know just what is weak about a machine, or what is broken. Get new parts, if need be; put in perfect order. Then go over it with a brush and linseed oil. Go over all the woodwork, fill all the little season checks, oil all the metal parts, then run it into its place under cover. The result? That machine will be like new next season. It will last fully twice as long.

Here's where you will realize the advantage of buying from a reliable company. When you order a new part, you expect it to fit. It must fit without filing, hammering, bending, etc. Making over a repair part when you get it, isn't necessary if you are careful when you buy the machine.

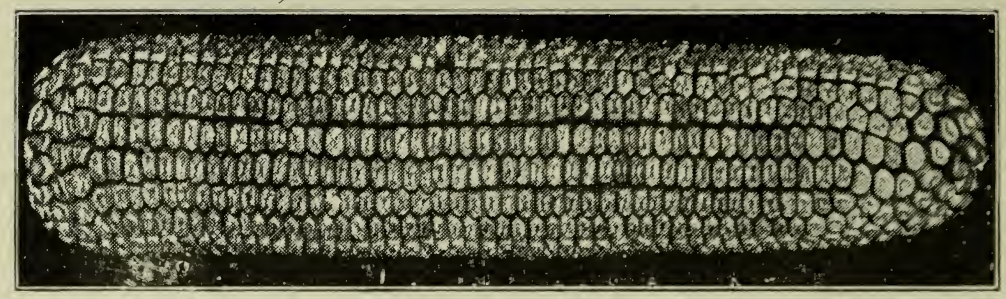
The manufacture of modern farm machines, like the I H C, is standardized so that du plicate parts will fit just as perfectly as the original piece, and these can always be purchased from the local dealer.

Here's another important point about I H C repairs. You will find them everywhere. A farmer wrote in the other day that he was mighty glad he had purchased an I H C machine. He had a farm in Iowa. He sold this farm and took up land in western Canada. He took his I H C machines with him because he thought he couldn't buy any better ones any place. Way up there in the Canadian Northwest, one of his I H C machines met with an accident. He went to the local dealer in a settlement hardly a year old, and there he found a piece which fitted just like the original piece purchased down in Iowa.

This is I H C repair service. At thousands of local agencies throughout the world, these repairs are always carried in stock, so that a new piece can be obtained on short notice.

For the protection of farmers, the I H C trade-mark is put on machines and parts. Whether you need a new machine, or just a knife section, pitman strap, or some other part, look for the I H C trade-mark; it guarantees a perfect fit and first-class material.

The Prize Ear of Corn for 1910



This is the ear that took the thousand-dollar prize trophy at the Columbus Corn Show ast year, in competition with thousands of ears of all varieties and from all parts of the country. It is Reid's Yellow Dent, 10 inches long, 7½ inches in circumference, and has 20 rows of kernels, 6 to the inch in the row, average ⅝ of an inch in depth, and $\frac{5}{16}$ of an inch in width. It was grown in Coles County, Ill.

How to Select Good Ears of Corn

1. A good ear should be cylindrical or nearly so. It should be full and strong in the middle portion, and the circumference should be approximately three-quarters of the length. The rows of kernels should be straight, and not less than sixteen nor more than twenty-two in number. The ear should be from eight and one-half to ten inches long.

2. The color of the grain should be true to variety, even in shade, and free from mixture. White corn should have white cobs, and yellow corn, red cobs.

3. The tip should not be too tapering. It should be well covered with straight rows of regular kernels of uniform size and shape.

4. Open, swelled, expanded, flattened, and pinched butts are objectionable. The rows of kernels should extend in regular order over the end of the cob, leaving a depression when the shank is removed.

5. The shape of the kernel should conform to the variety standard. The tips of the kernels should be full and strong, leaving no space between them near the cob. Toward the crowns, the edges of the kernels should be so shaped as to leave merely enough space between the rows to facilitate drying. Shrunken or pointed tips and badly rounded crowns are objectionable. The crowns of the kernels should be rather deeply dented, but not pinched or chaffy. The dent should extend evenly across the kernel, and there should be no pointed or sharp margins. The kernels should be about five-sixteenths of an inch wide by five-eighths of an inch long, and six to the inch in the row.

6. The ears should be well matured, firm, and sound. The germs should be uninjured, large, bright, fresh and vigorous looking.

Care of Seed Corn

Take better care of seed corn. Harvest it in the fall before the severe freezes. In Iowa and the north half of Illinois the last ten days in September are about the right time. It should be hung up, not piled up. It is circulation of air that is needed and not heat. Especially is this true during the first two weeks after the seed is harvested, while it is still sappy. There is no place better than an up-stairs room or attic, where the windows can be left open until the seed is dry. **Hang it up, don't pile it up.**

Saving a Valuable Farm By-Product

An I H C Corn Binder in the Field

The farmer who harvests only the ears of his corn crop wastes a by-product worth from $5.00 to $15.00 an acre. The stalks, leaves, and husks, when properly harvested, —just at the time when the ears begin to glaze— average a value of nearly $5.00 a ton, and the average crop produces three tons to the acre.

But when the stalks are left standing beyond the time of ripening; when sun, wind, rain, and frost have stripped them of their food elements, they are practically worthless. The best feeding authorities in the country tell us to save the stalks. Today, on thousands of farms, corn stover, with all the richness of the plant at its prime, has taken the place of hay for roughage. These farmers make the corn crop a double profit crop. They get the 60 per cent of value in the ears, and the 40 per cent of feeding value in the stalks—a full 100 per cent corn harvest. These farmers are safe against a shortage of roughage. They either sell the hay crop or they reduce their hay acreage.

You will find that these farmers use an

I H C Corn Binder

—a Deering, McCormick, Milwaukee, or Osborne—which cuts and binds the stalks into bundles and delivers them in piles ready for shocking, all in one operation. Regardless of whether the ground is hilly or level, rough or smooth, or whether the stalks are tall or short, the work is done at a great saving of time and labor.

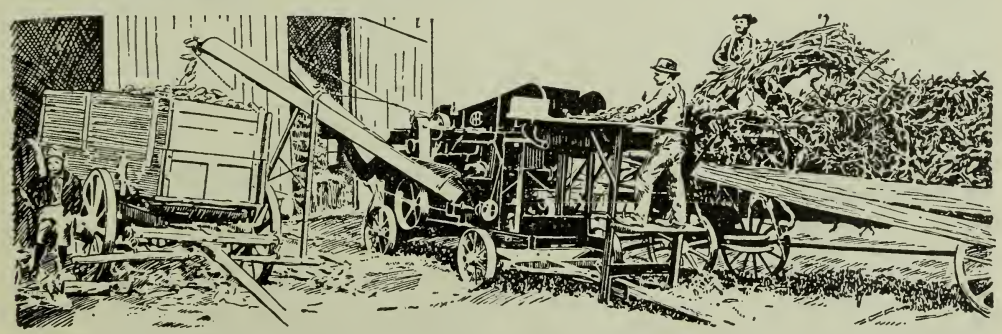
When the stalks are once cured, they lose none of their palatable, nutritious food elements. Then, sometime in the fall or winter, whenever most convenient, these farmers run the fodder through an

I H C Husker and Shredder

—a Deering, McCormick, or Plano. This saves half the cost of husking, and shreds the stalks, leaves, and husks so thoroughly that the stock will relish every bit of the fodder.

Harvest the cornstalks and sell more hay—make your corn a double profit crop this year. The I H C local dealer will help you to select the right machines.

If you need a corn sheller, remember that the Keystone line includes many sizes of excellent shellers.



An I H C Husker and Shredder Will Nearly Double the Value of the Corn Crop

Rotation of Crops

J. E. Waggoner of I H C Service Bureau

The success of the American husbandman is due not to careful and systematic farm management, but rather to the virginity of his soil. We have not been driven by the "gnawing pangs of hunger" to the study of the need of our soil, for the "golden horn of plenty" has so bountifully supplied us with the necessities of life that we have become a wasteful and careless people. The innumerable farms blanching in desolation in sections of the East, of Southern Illinois, and scattered here and there throughout the corn belt,—scars in the path of our progress—bespeak the unsystematic methods of farming that have been followed. Will not the coming generation point with scorn to these farms, as characteristic examples of our wasteful and unbusiness-like methods—saying, "These are our inheritance."

The advance guard of our westward march has been turned back, as it were, and the farmers are taking advantage of the opportunities that are within their immediate reach. With this has come, and it is welcomed by thinking men, the development of rural economics and farm management. These subjects have not reached the stage of their first maturity, but the advancement has been so rapid that we feel, with a large degree of certainty that the future decade will witness the reclaiming of many a deserted farm and the establishment of a more nearly permanent system of agriculture. The sustaining wedge in the arch of this progress is Crop Rotation.

How To Rotate—The first step in adopting a system of rotation, whatever it may be, is to study the arrangement of the fields. They should be as nearly equal in size as possible and so fenced off as to afford the highest possible degree of efficiency in handling. If the farm has 160 acres it may be divided in four or five equal parts depending on the system of rotation to be followed. The main thing to do in laying off a farm is to keep in mind the convenience of reaching the fields and of making them into pastures whenever necessary.

Each rotation whether it be in the northern section, the corn-belt, or the southern section, should contain one or more of the leguminous crops, namely alfalfa, clover, cowpeas, soy beans, peanuts, or vetch. By a leguminous crop is meant one that has the capacity, due to bacterial organisms in the soil, of collecting nitrogen from the air and storing it in small nodules on the roots of the plant. Nitrogen is one of the most expensive elements required for plant growth, and under a properly managed rotation of crops including the growing of legumes, it may be supplied at a cost of 2½ to 3, not over 5 cents a pound, while if purchased on the market it would mean an outlay of at least 20 cents a pound.

The following table giving the relative percentages of nitrogen contained in the roots and tops of these different leguminous crops will assist us in determining from which crop the greatest benefit may be received:

Crop	Lbs. of nitrogen in tops per acre	Per Cent of nitrogen in the roots
Cowpeas	65.2	6 %
Soy beans	130.9	6½%
Vetch	108.	11 %
Crimson clover	128.2	6 %
Alfalfa	54.8	42 %
Red clover	69.8	32 %

The crops to be grown in a rotation depend mainly on the following things:
The length of the season;
the character and condition of the soil;
the amount of rainfall.

A good rotation for the central section, or corn-belt, is corn, oats, and clover and timothy. For the northern latitudes some of these crops would have to be replaced by other grains. It might be best to grow corn only

Rotation of Crops (Continued)

once, or possibly not at all, depending on local conditions. In the southern section, the oats, or one crop of corn would probably be replaced by the cotton crop. The rotation to be adopted depends entirely on local conditions, but in every case regardless of the locality, of climatic conditions, or kind of soil, it should contain at least one leguminous crop and this crop should be adapted to that locality. In the south it is possible to grow alfalfa, Japan clover, soy beans, peanuts, cowpeas, and the vetches; in the corn belt or central section it is possible to grow alfalfa, clovers, some varieties of cowpeas, some of the more hardy varieties of the vetches; while in northern latitudes some of the hardy varieties of alfalfa, some of the clovers, and Canadian field peas, have been found to grow very satisfactorily.

Nearly a Permanent System of Agriculture—We have heard a great deal said recently about a permanent system of agriculture, and the necessity of adopting such methods as will result in the continuous use of our soils for agricultural purposes. The better half of a permanent system of agriculture is crop rotation, and in order to give us a better understanding of its meaning let us look at the following example:

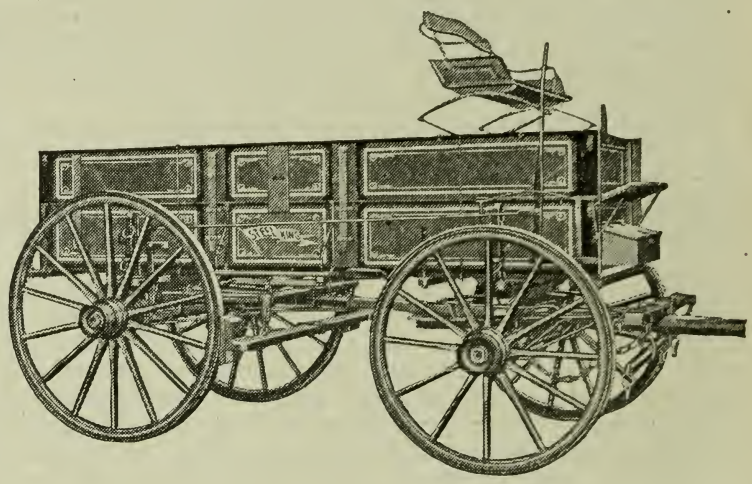
On a farm of 160 acres, four fields of 30 acres each were laid out; the remainder of the farm being taken up in small pastures and timber land. The following rotation was practiced. The first year, corn; second year, corn; third year, oats; and fourth year, clover and timothy. In figuring the amount of plant food elements removed, the average yields of these crops were taken. During the four years there were 274 pounds of nitrogen, 41.1 pounds of phosphorus, and 115.6 pounds of potassium removed from the soil by the crops. By careful handling of the stable manure, 70% of this plant food was returned; in other words, even though the manure is returned to the land, there is a deficiency for the four years, of 90 pounds of nitrogen, 13.3 pounds of phosphorus, and 36.7 pounds of potassium. From this it is readily seen why continuous cropping will finally reduce the land to a state of unproductiveness. If we grow two catch crops of cowpeas in the corn, they will return 100 or more pounds of nitrogen, thus bringing the soil back to its normal nitrogen content. The phosphorus may be replenished by the use of steamed bone meal, which costs about $25 a ton. One ton of it will supply approximately 200 pounds of phosphorus. Or a better way of maintaining the phosphorus content is to apply finely ground rock phosphate which, if used in connection with manure or green manuring crops, will give satisfactory results. One ton of kainite will supply approximately 200 pounds of potassium. If potassium is removed at the rate of 36.7 pounds every four years, the application of one ton of kainite every twenty to twenty-five years at a cost of $15.00 or $20.00 will maintain the normal amount of potassium in the soil.

Advantages of Crop Rotation—Other than the maintaining of a permanent system of agriculture, crop rotation affords us an opportunity to more successfully combat noxious weeds and to keep the soil in a more nearly perfect physical condition. The changing of pastures and meadow land enables us to apply stable manure at different times of the year and in different fields advantageously. Continuous growing of the same crop is apt to lead to a diseased condition of the crop and of the soil. Usually the difficulty comes from a fungus disease of which the following forms are the most common—mould, yeast, bacteria. The bacterial diseases are universally found in the form of rot, rust, smut, mildew, blight, scab, and wilt, most of which may be successfully controlled by rotation, spraying, and treating with various fungicides.

The principal thing to be remembered and considered in farm management is the rotation of crops, and whether we are located in the northern, the central, or the southern section, our motto should be—Proper Rotation and More Leguminous Crops.

Steel Gear Wagons

First-class wood stock is becoming more and more difficult to obtain. It now seems a question of only a few years until the supply of available material will be exhausted. Wagon manufacturers realize this and are turning to steel rather than run the risk of losing their reputation by using poor wood stock. While the high standard of quality found in I H C wood wagons has been maintained, the New Bettendorf and Steel King wagons have been designed to meet the conditions mentioned.



Steel has many points of superiority. It is of uniform strength. It has no checks, knots, cross grains, brashness or wind shakes. Steel gears never check, shrink, or warp, nor are they affected by climatic conditions.

Gears—New Bettendorf gears are made of flawless steel. A removable sleeve reinforces the axle, relieves the skein of all wear, can be replaced when worn, and makes the axle practically everlasting.

Steel King Gears have axles that are a combination of sheet steel formed into the standard shape of a wood axle and into these hollow axles cast skeins are securely fitted. Bolsters are equipped with wear plates the same as found on bolsters made of wood. The Steel King has the only adjustable bolster stakes on the market. They can be adjusted to 8, 10, 12, and 14 inches in height.

Steel King Skeins Can Be Replaced—Steel King skeins combine the good qualities of the cast and steel skein. This skein can be replaced when worn, thus making the axle practically everlasting.

The Steel King is the only steel gear wagon on the market that is equipped with a cast skein that can be replaced when worn. It is a construction that adds many dollars in extra value to the wagon.

Wheels—Oak hubs, oak and hickory spokes, oak rims thoroughly seasoned and soaked in oil, properly tired and banded, correctly proportioned and assembled, and attractively finished, form the wheels that New Bettendorf and Steel King users appreciate and recommend.

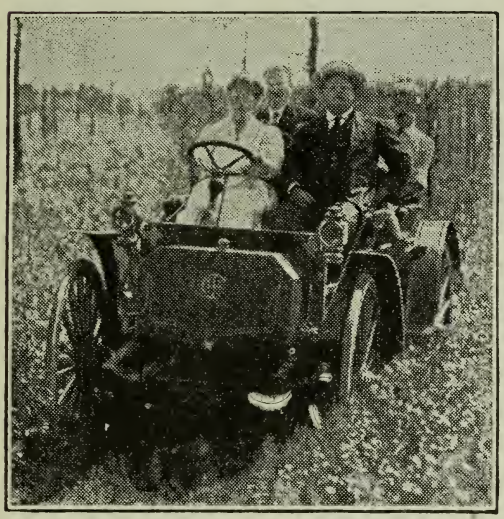
Boxes—Steel King and New Bettendorf boxes are constructed of the best thoroughly-seasoned, air-dried wood stock.

Finish—Paint and varnish of the best quality, applied by expert wagon painters who understand their business in all its details, protect the fibres of the wood stock, and add not only durability but attractiveness.

Guarantee—New Bettendorf and Steel King wagons are manufactured by the International Harvester Company, which is in itself a guarantee of quality and assurance of long and continued service. Every I H C wagon bears the trade-mark. Look for the I H C trade-mark—it's an assurance of satisfaction.

The Value of the Automobile to the Farmer

Farmers Are Using the Automobile for Many Purposes It Saves Time in Many Ways



Ex-President Roosevelt in an I H C Auto Wagon

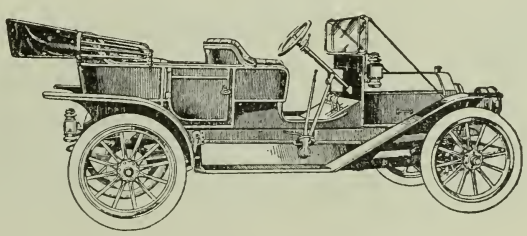
H. B. Fullerton, director of the experimental farms owned by the Long Island Railroad at Medford, L. I., in speaking of the utility of the automobile for farm purposes, says: "We have in our charge two experimental stations established by the Long Island Railroad to try out land which for generations has been said to be valueless. These experimental stations are about fifteen miles apart, connected only by little more than woods roads, for the greater part of the distance, not even worked according to the antique methods so generally pursued in the United States.

"In an effort to find means of overcoming the distance between these two farms, we found that thousands of western farmers, big and little, were using automobiles in roadless territory and our investigation proved them to be thoroughly practical. The machine which we adopted, after investigating the merits of several different makes, is the product of the International Harvester Company and known as the International Auto Wagon. We have used this vehicle on the farm for every purpose imaginable, from conveying visitors to the railroad station at Medford to hauling machinery and other things from one place to another on the farm. Our trouble with this automobile has been decidedly limited and we have used it not only for all purposes, but under all conditions—day or night, rain or snow."

The experience of Mr. Fullerton goes to prove that the automobile is adapted to the farmer's needs and that bad road conditions will not prevent its use. As a convenience for light hauling it is far superior to the horse-drawn vehicle, particularly in the hot weather when road work is extremely hard on the horses.

The automobile has been brought to such a high state of efficiency that farmers everywhere are coming to realize its value as a money and time saver, and are finding new uses for it every day.

The I H C line of automobiles includes International Auto Wagons and I H C 30 Touring Cars.



I H C 30

Why Milk Sours

The souring of milk is almost entirely due to the action of bacteria. These bacteria reach their greatest activity when the temperature is high, and therefore as soon as possible after milking, the milk should be cooled in running water tanks and kept cool by a constant stream of running water. Sometimes, however, souring is caused by dirt accumulated in the pail while milking.

It is generally believed that the souring of milk is hastened by thunder storms. Experiments have shown that electricity in itself does not have any effect on the milk, the reason is the high temperature of the atmosphere immediately preceding the thunder storm, which creates more favorable conditions for the rapid multiplication of germs in the milk.

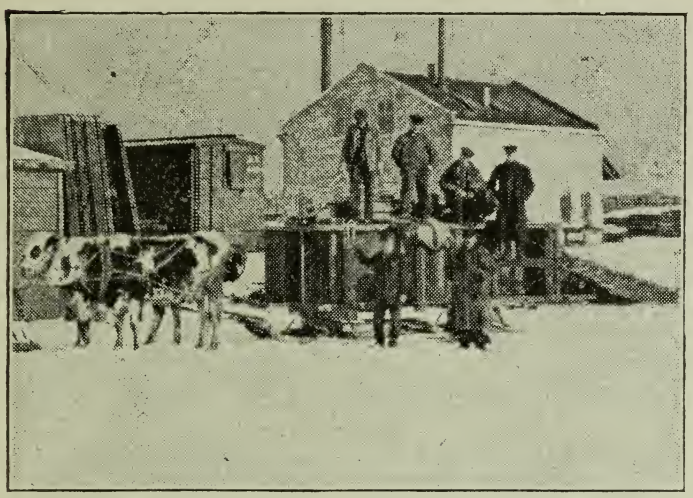
The utmost carefulness should be observed for insuring proper sanitary conditions. The milk should be strained immediately after milking. If the milk is to be put through the separator it should be done while it is still warm. A careful dairyman will waste no more time than necessary in putting the milk in a cool place, and the cooler the better. That is the way to keep the milk sweet longest.

I H C Service

A glance at the map reproduced herewith indicates the exceptional facilities possessed by I H C for serving the farmers of this country and Canada. Branch houses carrying complete stocks of machines and repairs are located at all the important points. In this way every agricultural community is served. Throughout each community served by the branch houses, you will find I H C local dealers. This brings a man directly interested in I H C machines within a few hours of every harvest field.

For your protection, the I H C trade-mark is put on all I H C machines and repairs. Look for it.

Threshing Near the Arctic Circle



An I H C Thresher Loaded On a Bob-sled Ready For the Trip to the Arctic Circle

When we think of the Arctic Circle, we think of mountains of ice, snow, and 60 degrees below zero, and yet should you visit the Peace River Valley, Alberta, Canada, right on the edge of the Arctic Circle, you would find an I H C thresher at work just as you see it on the farms in Illinois. An interesting story is told of one thresher in this far northern country:

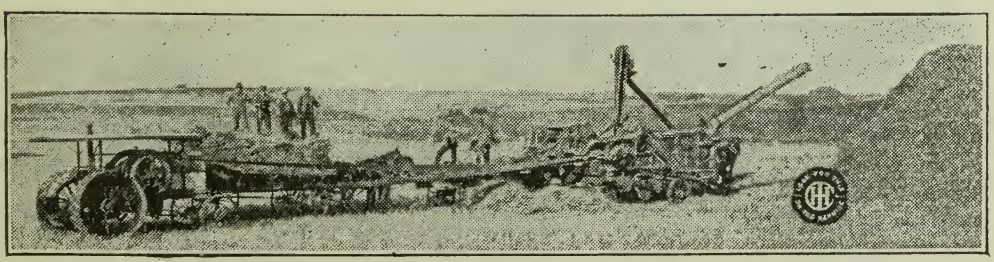
Early last winter a farmer left his home in Grand Prairie, in the Peace River country, Alberta, Canada, near the Arctic Circle, and came all the way across country to Edmonton. After a careful investigation, he purchased an International thresher, loaded it on a heavy sled, and hauled it by ox teams five hundred miles over frozen rivers and prairies, through the snow and dark forests, uphill and down, back to his home in Grand Prairie. The photograph reproduced herewith shows him just as he was ready to start on his long journey.

Quite a winter's trip, you say? Yet that was the only way he could get his thresher home. There were no railroads—there were no bridges. The first warm sun of spring would melt the ice, and the frozen rivers would become raging torrents, over which he could not possibly take his thresher.

Think of the confidence this man had in the I H C. He satisfied himself that the I H C thresher was the strongest and the most practical machine on the market—the one thresher that he could take five hundred miles from a railroad station with assurance that it would thresh his crops.

The I H C line includes several well-known threshers—some designed especially for the farmer's individual use, others for custom work.

A Sterling, New Racine, Belle City, or New Century thresher in connection with an I H C gasoline engine, or an I H C gasoline tractor, will prove exceptionally serviceable. The work done by these outfits every day, justifies the confidence which farmers place in them.



A 20-H. P. I H C Tractor on the Farm of S. Nicholson, Bradwardine, Manitoba, Operating a Large 28x42-inch Separator

Alfalfa

Extract from an Article by J. E. Wing, Expert Agriculturist, in "For Better Crops"

Advantages of the Alfalfa Crop—What, briefly, are the advantages of the alfalfa plant over other forage crops? First, that it roots so deep in the soil. It is safe to say that alfalfa roots penetrate as deep as there is any soil. If the soil is three feet deep, the roots will penetrate three feet. If the soil is ten feet deep, the roots will go down ten feet. And if the soil is thirty feet deep, the roots will go down thirty feet. Thus, the whole soil is utilized.

The Whole Season—Next, remember that the plant uses the whole of the growing season, and it is the one crop that the farmer grows that does this. It is very hardy and does not much mind cold. As soon in spring as the sun has slightly warmed the earth, the alfalfa is up and is growing. It does not mind light frosts, but keeps right on growing. Soon after the corn is planted, the alfalfa is ready to cut—by the first of June in most of the region of the corn belt; earlier, in the South; and not much later anywhere. Thus the soil has yielded one crop almost before the corn has begun to take hold at all.

Next, consider what happens when you harvest that first cutting. In thirty days from the time it is cut there stands a second crop ready for the mower. And after that, in thirty-five or forty days there is yet a third crop ready. And if it is taken off on time there is the fourth cutting. Much of the yield of these later cuttings depends of course upon the presence of moisture in the soil, but it is sure that the alfalfa will use all of the moisture from rainfall and if irrigation is possible it will use a very large amount of irrigation water. Thus it uses to the best advantage all of the soil, all of the season from early spring till late fall, and all of the soil moisture. Of no other crop can this be said.

Value of Resultant Crop—The best of all is that the forage that the alfalfa plant produces is the richest and most palatable that the farmer can grow. The alfalfa plant, cut at the right time, and rightly cured, is very rich in protein. What is protein? It is what makes the red flesh and red blood of the animal. It is what makes nerve and brain and vital process. Alfalfa is rich in bone. It is the best feed for the baby on the farm,—the baby colt, the baby calf, the baby lamb, pig, and chick. It is good for the baby animal because the baby must have protein to build his little body. And as it is best for the baby so it is best for the baby's mother. It makes her full of milk and restores her tissues. It builds the unborn young within her, and after its birth it fills her with milk to make the baby grow.

For Working Horses—There is no one thing so good as alfalfa for the working horse. It builds his wasting muscles, it keeps him strong and healthy. He needs much less grain when he can have alfalfa hay. And he is fuller of life and spirit than when fed upon any other hay. It is only necessary to remember that this hay should be fairly mature when it is cut, and well cured so that it shall not be moldy or musty.

For old and hard-worked horses in thin flesh, alfalfa has great restorative powers. For driving horses, it should be fed in moderate amounts, else it will make them fat and soft. Even working teams may be fed too large amounts of alfalfa hay.

Alfalfa for Sheep—Sheep love alfalfa above all other forage, and for a good reason. It is the one thing best suited to their needs. They, more than other animals, need a ration rich in protein. The growing lamb needs it to build his muscles, blood, brain, nerves, and bone. The pregnant or nursing ewe needs it to replenish her system fast drained by the demands of her offspring. The ram needs it to keep up his vigor. The wool-bearing sheep—and all breeds bear some wool—need alfalfa because it has in it the peculiar elements that make for growth of good, strong-fibered wool.

For Mares and Foals—There is nothing else so good for the mare, while

Alfalfa — Continued

she is carrying her unborn colt, as to run on an alfalfa pasture, and eat alfalfa hay in winter. Her colt comes strong and well-developed, and after it has come she is full of milk for it. Then if she is in the alfalfa meadow, the colt early learns to nip the delicious herbage, and thus takes in additional nourishment at the time when he is best able to make use of it. It makes his bones grow and covers them with good, firm muscle, it hastens his development greatly, it adds to his beauty, and spirit, and usefulness. The best thoroughbreds in the United States often come from the alfalfa meadows of California and the breeders of race horses in Kentucky are beginning to add alfalfa to the bill of fare of their petted darlings. The great Percherons of France eat alfalfa with the bloom on it when they are lusty foals in their native land. The horse breeder wherever he is should at all times endeavor to call to his aid this crop that is, par excellence, the one best suited to his use. While there is some danger in grazing sheep or cows on alfalfa, there is none whatever in grazing horses on it, and thus not only the best but the cheapest possible development may be secured.

Alfalfa for the Dairy Herd—Calves grown on alfalfa develop rapidly and are ready to become mothers earlier than when developed on other foods. Pregnant cows fed alfalfa come in strong and well-nourished, with full udders. Milking cows, fed alfalfa hay as part of their ration, give milk as with no other possible combination.

Alfalfa and Silage the Cheapest Dairy Ration—With good alfalfa hay and good sweet corn silage, made from corn that has been allowed to mature well before being harvested, the cheapest and best milk yields are secured. With this ration there is indeed very little need of any other grain. That great dairy authority, ex-Governor Hoard, has found in practice that with this combination, and as little as four or five pounds daily of grain, not only has he had the maximum returns in milk and cream, but he has seen the dairy herd maintained in remarkable health and vigor.

Alfalfa Fed Beef Cattle—If the beef cow has a sufficiency of alfalfa in winter she needs no grain at all. After her calf comes, she may have a little grain, and she and the calf, all the alfalfa they care to take. Her calf should be developed largely on alfalfa.

Alfalfa for Pigs—The problem of maintaining brood sows in complete health in winter time is a serious one in the corn belt. They are voracious and must be fed. * * * Now if the sow is fed a liberal allowance of alfalfa hay she finds in it nearly all the nourishment that she needs, and she brings into the world a fine litter of pigs, and has milk for them. She has use of her natural instincts and seldom destroys her pigs, either by accident or intent. It is wise to allow her an ear or two of corn each day in addition to what early cut alfalfa hay she will consume.

If it is summer time and she can have the run of the alfalfa field she will thrive with very little grain in addition until the pigs come. After that time it will pay to feed her a little more grain. T he sucking pigs will soon learn to nip the tender leaves and stems, and that will add greatly to their thrift and growth. It pays largely, however, to feed shotes some corn in addition to alfalfa pasture.

Alfalfa for Poultry—The alfalfa field is a rich storehouse for the poultry keeper. In summer time, fowls forage far and wide, eating the tender alfalfa leaves, rich in protein, and finding insects. In winter time fowls will consume great amounts of alfalfa leaves and the fat stems. Sometimes alfalfa is ground into meal for poultry and swine.

Many of our ships would come in if only we were willing to go out with a tug and meet them.

Up-to-Date Dairying

W. D. Hoard, Editor Hoard's Dairyman
Fort Atkinson, Wis.

In what does it consist? What is meant by the words used? "Up-to-date" means doing a thing with the best knowledge, the best methods known to the present time. In dairy farming, as in all things else, there are all sorts of men. Some are following the same ideas about cows, about stables, about feeding, about farm management, that prevailed with their fathers sixty years ago. As matters stood then this was all well enough. Sixty years ago all grain was cut by the cradle, except such as was cut with the hand sickle. What would be thought of a farmer who adhered to the methods and ideas of grain farming in vogue sixty years ago? But we know of plenty of farmers who have no better ideas about the dairy cow than existed then; who still use the rigid stanchion in their stables, just the same as was used sixty years ago; who have the same notions about light and pure air in the stable that prevailed among the most ignorant farmers of the nineteenth century; who reject all knowledge concerning bacteria or disease germs; who sneer at the idea of tuberculosis; who disbelieve in the silo; and who cannot be prevailed upon to accept or try any of the conclusions or methods of modern thought or study.

The average farmer is very conservative. Why? Largely because of a very limited range of reading, study, contact, and observation. St. Paul's injunction to "Prove all things; hold fast to that which is good," is exchanged for holding fast alone to that which he learned in his youth. But up-to-date dairying should have a definition. What does it require?

1. It requires the right kind of a farmer. A man who recognizes what science has to give, what it is contributing to the well-being of the man behind the cow. It requires a reading, thinking student of the farm and the cow. A man with an active, alert mind ready to seize hold upon all the advantages of modern knowledge. This is no place for the farmer who sneers at "book farming," who thinks that the profit of dairying is enhanced in proportion as the farmer is ignorant of dairy principles. Some men have a way of justifying their bad practices and comforting themselves in their ignorance by just that kind of sneering. But it is the cry of weakness, not strength.

Up-to-Date Dairying (Continued)

2. It requires, next, an intelligent idea of the modern dairy cow; how to breed her, house and care for her, how to feed her on a daily ration that will help bring out and develop her dairy capacity for larger milk and butter production. There is a wonderful difference in cows. This can be seen in the same herd and especially by comparison of the several herds in the same creamery neighborhood. *Hoard's Dairyman* has sent out agents and made a special study of 2,100 herds, numbering over 28,000 cows in 13 states from New England to Iowa and Minnesota. A special study was made of the owners of these cows, the dairy intelligence they possessed, the breed of cows they kept, the way they fed them, housed them, and cared for them; and finally just what it cost each farmer to keep his cows. Then the agent went to the creamery and obtained the exact figures of the yield of each herd in milk and cash. From this we figured just what these cows earned for every dollar's worth of feed they consumed. Here we could see the part that brains played in each herd. When we struck the reading, thinking farmer, one who used his mind as well as his hands, the profits went up in some cases to 300 per cent for each dollar's worth of feed. When we struck the ignorant, non-reading farmer, the profits went down in some cases to a loss of fifty cents on every dollar's worth of feed consumed.

3. It requires a teachable spirit on the part of the farmer, a willingness to admit his own ignorance and a determination to put sound knowledge in place of ignorance. No class of men in this country today need the stirring and stimulating effect of better study of their own business as do the farmers. The proof of this is seen in the widespread loss of fertility in nearly all of the farms from the Atlantic coast to the great lakes. Who is responsible for this kind of farming that in the past fifty years has wasted the natural resources of soil over so wide a stretch of territory? No one else but the American farmer. When the Commissioner of Agriculture of the state of New York puts out the statement that that state has lost over $168,000,000 in 30 years through the decline in the price of farm lands, it is time to ask the question: "Would the New York farmers thus have impoverished themselves and their state if they had understood this business of farming as they should? In every country in Europe the price of farm land is maintained if fertility is maintained. New York farmers have done no worse than Ohio

Up-to-Date Dairying (Continued)

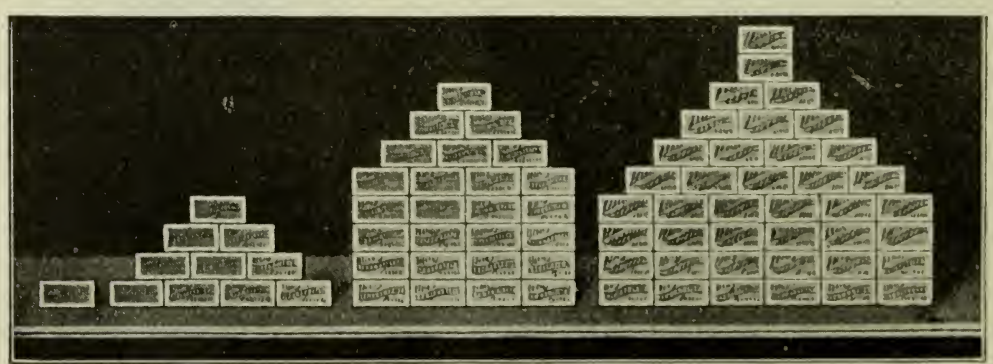
and Indiana farmers, and Illinois, Wisconsin and Iowa farmers are following in their footsteps as fast as they can. Everywhere we see the depleting effects of bad, ignorant farming.

4. There must be a closer study of dairy economics in the use of cows. In the 28,000 cows referred to in *Hoard's Dairyman* cow census, fully one-third were kept at a loss. Think of a great body of farmers imposing a tax of 33 per cent on themselves because they will not study the economics of their own business. Don't you think it requires brain action to comprehend the principles of up-to-date dairy farming? Thousands upon thousands of farmer patrons of creameries are putting themselves to all the expense of up-to-date dairying and yet they persist in keeping a low-grade class of cows. The first step toward improvement is the purchase of a pure bred bull of some one of the dairy breeds. Then the farmer will put himself in the way of having profit-bearing tools for his use.

Here is an example of what up-to-date thinking will do in the way of increasing the profit of cows. In this (Jefferson) county is a herd of cows which the owner has developed practically in the past twelve years. He has followed enlightened ideas in every particular. This herd of 29 cows last year averaged 8,234 pounds of milk and 420 pounds of butter fat. The average price of butter fat at the local creamery the past year was 32 cents a pound. So if the cream of this herd had all been taken to the local creamery they would have earned in gross $134.40 per cow. The cost of keeping of this herd was not to exceed $50.00 per cow. This leaves $82.40 as the net return per cow when considered from the creamery standpoint. Yet all about this herd are farmers whose herds did not average more than $50.00 to $60.00 per cow with cost of keeping fully $40.00 per cow. Compare the satisfaction of a profit of $82.40 as against $10.00 or $20.00 per cow.

In the one case up-to-date ideas of dairying are practiced at every turn. In the other, notions, that are not ideas, control the farmer. In this same herd are seven two-year-old heifers whose average production the first year of their milking was over 8,000 pounds of milk and 403 pounds of butter fat. That shows what a skillful use of breeding principles and close adherence to up-to-date methods will do in the way of profit. Aside from profit there is vastly more of satisfaction in carrying on a farm and dealing with the problem of dairying if our intellect, our ambition, our taste, are enlisted. In a word, this means progressive ideas and labor—that is, up-to-date dairying. But up-to-date principles must be recognized and obeyed.

Butter Lost in Skim Milk From One Cow in One Year



Courtesy Purdue Experiment Station

Hand Separator	Deep Setting	Shallow Pan	Water Dilution
Loss of Butter	Loss of Butter	Loss of Butter	Loss of Butter
1.2 lbs.	10.1 lbs.	26.2 lbs.	40.5 lbs.

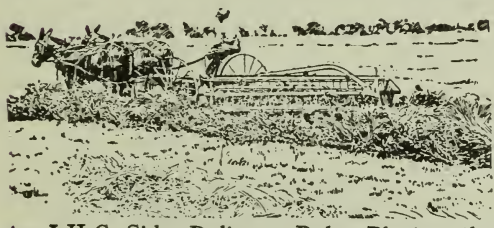
How Do You Handle Your Hay Crop?

Forking Hay in the Old-Fashioned Way

The Old-Fashioned Way—Do you rake the hay into windrows with a sulky rake; fork it into cocks or small stacks, then onto the wagon, then off again to the stack or into the barn? This old-fashioned way was the new way when you were a boy. Have you outgrown it?

Handling Hay With I H C Stackers and Sweep Rakes

The New Ways—With I H C sweep rakes and stackers, you sweep the hay from the windrow or swath up to the stacker, and stack it in the field to be baled and shipped to market, or else left unbaled to be hauled to the feed yards as needed. This way puts the hay into stacks at minimum cost.



An I H C Side Delivery Rake Placing the Hay in Windrows

Or, after the hay has been cut, you follow with side delivery rakes which place the hay in light, fluffy windrows; then with the hay loader you load the hay onto the wagon to be hauled direct to the feed yard and stack, or to the barn. An I H C swath and windrow hay loader gathers the hay and loads it from either the swath or windrow onto the wagon. If you load your hay directly from the swath you should use a tedder, as it will stir the hay so that the air will circulate freely through it, insuring a rapid, even curing.

An I H C Loader Loading From the Swath

The I H C line of haying machines and tools includes:

Plain lift mowers—1 and 2-horse.
Vertical lift mowers.
Sulky hay rakes.
Two, 3, and 4-wheel side-hitch and rear-hitch sweep rakes.
Side delivery hay rakes.
Windrow hay loaders.
Swath and windrow hay loaders.
Swinging hay stackers.
Overshot hay stackers.

How to Make a Road Drag

A good road must be oval, hard, and smooth. By the use of the split log road drag illustrated and explained herewith it is possible to make a road with these three attributes.

No matter how bad the road material may be, a good road is possible if the drag is used. Clay, for instance, makes an almost impassable road when water-soaked. If the drag is used on this material, the clay is molded and tamped into a form that bakes on the surface and sheds water instead of absorbing it, making one of the most desirable dirt roads. If the road is oval, hard and smooth, it will shed water.

It has been estimated that the road drag invented by D. Ward King, Maitland, Mo., has made model roads out of almost impassable clay ones of the corn belt, and at a cost of less than $10.00 per mile.

The best time to use the drag is in spring. By addressing the State Boards of Agriculture of Kansas and Missouri complete descriptions of this drag may be obtained.

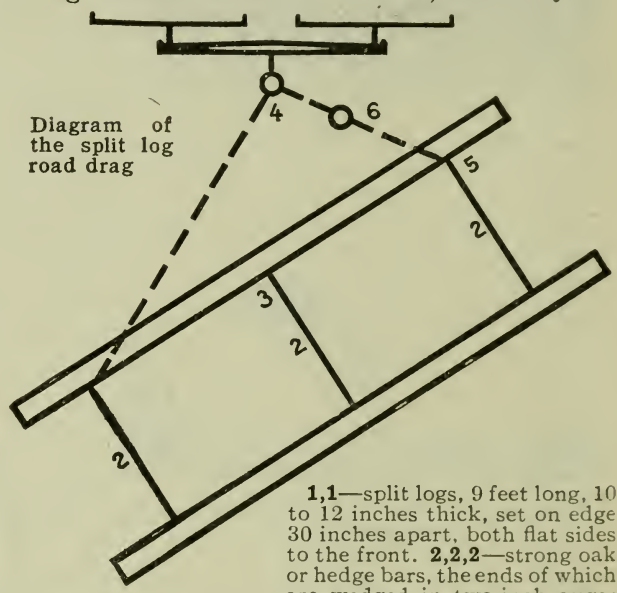


Diagram of the split log road drag

1,1—split logs, 9 feet long, 10 to 12 inches thick, set on edge 30 inches apart, both flat sides to the front. **2,2,2**—strong oak or hedge bars, the ends of which are wedged in two-inch auger holes bored through the logs or slabs. Dotted line—chain, or strong wire. **4, 6**—rings to connect double-tree clevis. Hitch at **4** and stand at **3**, on a plank laid at the cross-bars for ordinary work; or hitch at **6** and stand at **5** for ditch cleaning or to make the drag throw more dirt to the left.

Advantages of Feeding Ground Grain

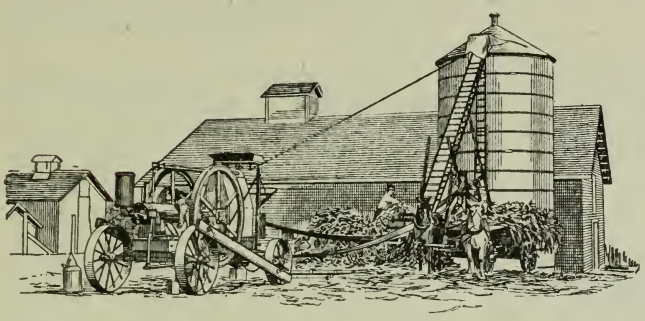
Prof. W. J. Kennedy of the Iowa State College, in an article in the Farmer's Tribune on the subject of grinding feed for live stock, says:

"A careful study of the experiments conducted by the various experiment stations, and under a variety of conditions with different classes of stock, has invariably shown that it requires less ground grain to produce a given amount of milk, meat, or work than it does when whole or unground grain is used. In some instances the difference is as high as 35 per cent."

IHC grinder with sacking elevator

Use an International grinder. The International feed grinder is built in two styles. One style is designed especially for grinding corn on the cob; however, it will also grind wheat, barley, oats, kaffir corn, etc. This mill is built in three sizes—with 6, 8, and 10-inch grinding plates. The other style is designed for grinding small grain only, and is built in two sizes, with 6 and 8-inch grinding plates.

Suggestions for Building Silos

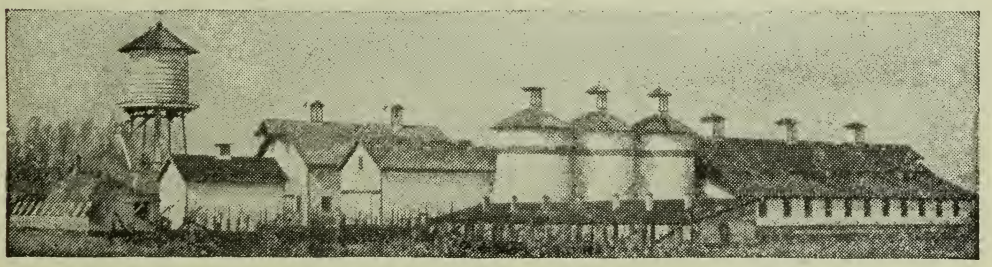


IHC Famous Portable Engine Operating a Fodder Cutter

One of the first things to be considered when about to build a silo is the size necessary. The diameter of the silo should be such that when feeding, three or four inches of silage will be removed from the top every day. This is important, as the silage when exposed to the air molds and becomes unfit for feeding, but if three or four inches are removed evenly from the top each day, the silage will not be exposed to the air long enough to become damaged. If more silage is needed than can be stored in a silo 20 feet in diameter by 50 feet high, a second silo is preferable to a silo larger than the above dimensions. If the silo is more than 20 feet in width, it is probable that enough will not be removed at each feeding to prevent molding. It is impracticable to elevate the silage more than 50 feet, as this is about as high as it can be conveniently elevated with ordinary farm power. Besides, the weight of the silage exerts great pressure against the sides of the silo, and if the silo is built extremely high there will be danger of bulging at the bottom where the pressure is greatest.

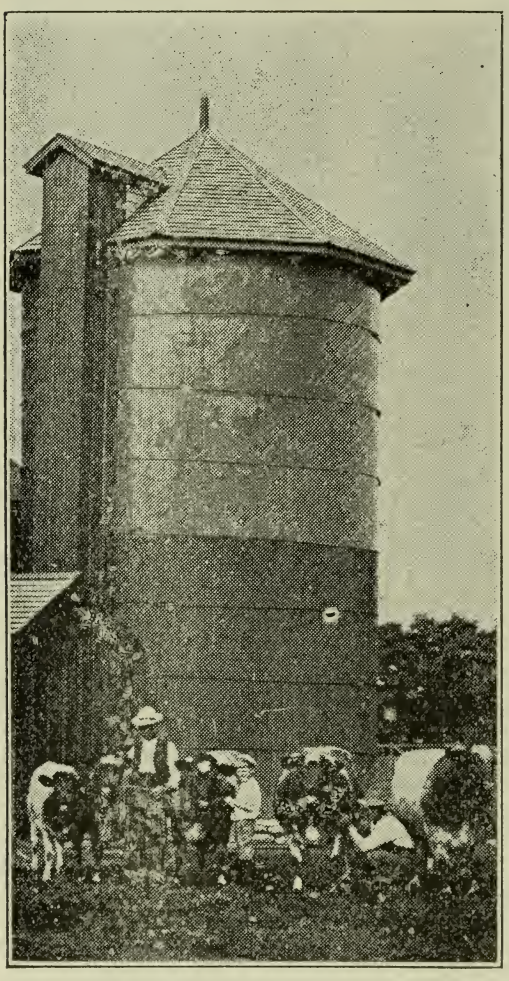
The silo should be built right up against the barn in which the silage is to be fed, preferably at the end of the building, as this will be found most convenient for feeding. There is no reason why the silo should be set off at a distance from the barn, and if this is done the work of bringing the silage to the barn will be considerable. The construction of the silo should not be undertaken by inexperienced persons. Silo building has become quite common in many localities and it will not be hard to find help who have had some experience in this work. There are many materials which can be used in building a silo, all of them having individual merit. The materials used, therefore, will be determined by personal preferences and local conditions. A few statements can be made that are applicable to all silos and which the builder should bear in mind.

The foundation should be solid and well made, as is true regarding the foundation of any permanent building. As the weight placed upon the foundation is that of the upper part of the silo, the necessary thickness of the walls will depend upon the material used in constructing the part of the silo that is above ground. A concrete silo will naturally require a thicker foundation than a light stave silo. The foundation should extend below the



Modern Dairy Barns and Silos—Courtesy Breeders Gazette, Chicago

frost line and the ground in which it sets should be well drained. If the foundation must be built in soil which contains a considerable amount of moisture, the foundation and floor should rest on a bed of gravel or cinders, and drain tile should be provided to carry off the water.



An Up-to-Date Silo at Elmendorf Farm, Lexington, Ky.

The inside walls should be smooth and perfectly perpendicular, so that the silage can settle evenly without sticking on the walls. The walls must be air-tight and water-tight. Air will cause the silage to rot, and loss of moisture will cause it to become dry and moldy. Not only should the walls be water-tight, but they should be constructed of material which will not absorb the water from the silage, as this will dry the silage and cause molding just the same as if the water leaked out.

The cost of filling a silo has been estimated to average about 56 cents per ton, the range of cost being from 40 to 76 cents. The difference is due to the distance the corn must be hauled, the experience and skill of the men doing the work, and the size and power of the machines used.

When the silage is elevated into the silo by the blower or elevator, it is not evenly distributed, and consequently it is a good plan to have a man in the silo to fork the silage about. This will insure an even distribution of the light and heavy parts of the silage. The man in the silo can also devote part of his time to tramping the silage, especially around the edges. Tramping and packing the silage will add greatly to its keeping qualities by excluding the air. If the silage is dry when put into the silo, sufficient water should be added at the top to cause the silage to settle and exclude the air.

Amount of Silage Fed Per Day

Kinds of Stock	Daily Ration Pounds
Beef Cattle—	
Wintering Calves, 8 months old	15 to 25
Wintering Breeding Cows	30 to 50
Fattening Beef Cattle 18–22 months old—	
First stage of fattening	20 to 30
Latter stage of fattening	12 to 20
Dairy Cattle	30 to 50
Sheep—	
Wintering Breeding Sheep	3 to 5
Fattening Lambs	2 to 3
Fattening Sheep	3 to 4

The capacity of rectangular silos is easily figured, as it is only a case of multiplication. The capacity of round silos, however, is not as readily computed, so that the table below gives at a glance the approximate number of tons that can be stored in a round silo from 10 to 26 feet in diameter and from 20 to 32 feet deep.

Table Giving the Approximate Capacity in Tons of Cylindrical Silos for Well Matured Corn Silage

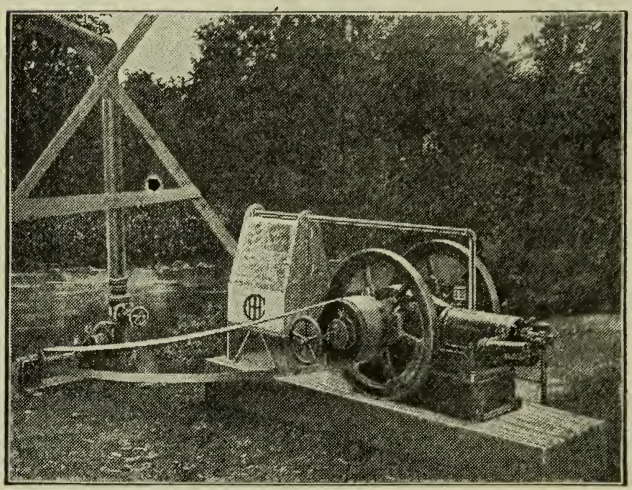
Depth of Silo—feet	Inside Diameter of Silo—Feet												
	10	12	14	15	16	18	20	21	22	23	24	25	26
20.....	26	38	51	59	67	85	105	115	127	138	151	163	177
21.....	28	40	55	63	72	91	112	123	135	148	161	175	189
22.....	30	43	59	67	77	97	120	132	145	158	172	187	202
23.....	32	46	62	72	82	103	128	141	154	169	184	199	216
24.....	34	49	66	76	87	110	135	149	164	179	195	212	229
25.....	36	52	70	81	90	116	143	158	173	190	206	224	242
26.....	38	55	74	85	97	123	152	168	184	201	219	237	257
27.....	40	58	78	90	103	130	160	177	194	212	231	251	271
28.....	42	61	83	95	108	137	169	186	204	223	243	264	285
29.....	45	64	88	100	114	144	178	196	215	235	256	278	300
30.....	47	68	93	105	119	151	187	206	226	247	269	292	315
31.....	49	70	96	110	125	158	195	215	236	258	282	305	330
32.....	51	73	101	115	131	166	205	226	248	271	295	320	346

Referring to the table below, it will be an easy matter to determine the size of the silo needed. This table is based on the assumption that 40 pounds of silage will be fed per head for a period of 180 days:

Number of Cows	Pounds Required Daily	Silage Consumed Yearly—Tons	Size of Silo Needed			Acreage Required at 15 Tons per Acre
			Diameter Feet	Height Feet	Capacity Tons	
6	240	22	9	20	22	1.5
			10	16	22	1.5
9	360	33	10	24	34	2.4
			11	22	34	2.4
13	520	42	10	28	42	2.8
			10	30	47	3.0
15	600	54	12	26	55	3.7
			14	21	55	3.7
20	800	72	12	32	74	5.0
			14	26	74	5.0
25	1000	90	12	38	94	6.4
			14	30	91	6.1
30	1200	108	14	34	109	7.3
			15	31	110	7.4
35	1400	126	16	31	125	8.4
			14	38	128	8.6
40	1600	144	18	29	144	9.4
			16	34	143	9.3
45	1800	162	18	32	166	11.0
			16	38	167	11.1
50	2000	180	18	34	181	12.1
			16	40	180	12.0

Irrigation and Drainage

By Stephen D. van Benthuysen, Dakota Wesleyan University



I H C Gasoline Engine Used for Irrigating—Corvallis, Oregon

Irrigation — Irrigation is becoming a necessity for the successful growing of crops in arid and semi-arid regions. Irrigation has been practiced for many centuries, probably more extensively through what is known as the horizontal or the surface method of applying the water to the soil than by other means. There are in practice today three general methods of irrigation—(a) the surface method; (b) the sub-surface system; (c) the Skinner system.

The Surface Method—In the surface method of irrigation the water is turned on the soil when needed, and is carried over the land by ditches and what are known as laterals that distribute the water to the growing plants. It is this system that is largely practiced in the western states. For successful irrigation of this kind, the ground must be level or only gently sloping to obtain the best results. Cultivation should be commenced just as soon as the soil will permit in order to prevent the loss of moisture by evaporation. Cultivation will set up capillary action in the soil, which is the ideal sought in soil culture.

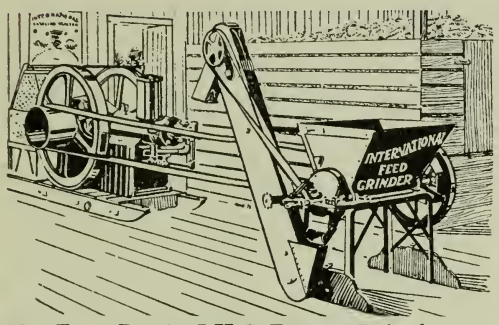
Piping the Sub-Surface—Under the sub-surface method of irrigation the water is supplied through pipes about 10 inches underneath the ground. The pipes are perforated and the water seeps through them; they are placed just deep enough under the soil to permit the plows and other tillage implements to pass over them in safety. This method is practiced by many western orchardists and as soon as moisture is noticed upon the top of the soil the water is turned off and cultivation commenced, which prevents evaporation. This method is ideal and inexpensive in that all moisture, by care, may be retained in the soil.

The Skinner System—This is a method by which the water drops down from a suspended framework to which the piping is attached, the water falling upon the plants upon the same principle as a rainfall. This method is practiced in some places in the southwest and west, and is said to give a better distribution of water to growing plants than to irrigate upon the surface or by the sub-surface method. It must be noted that the pipes through which the water is conveyed overhead have perforated holes through them through which the water percolates or sprays when turned on. The force of the water in the pipes largely determines the space irrigated by one line of piping. To get sufficient pressure for successful distribution, it is necessary to have a large reservoir of water, or, pressure may be obtained by pumping.

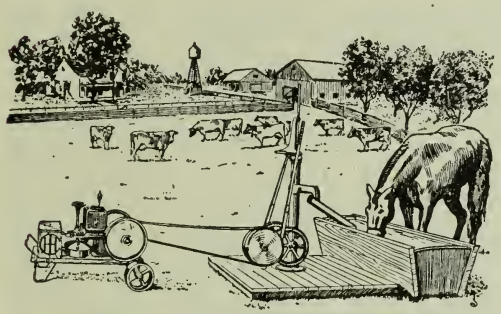
When to Water the Soil—It should be noted that under either of the three systems, the proper time to turn on the water for the need of the growing crops is as much a study as is how much water to give to any class of soil. The time to turn it on and the amount of water depends largely upon the nature of the growing crop and the texture of the soil. It should be remembered

Continued on page 62]

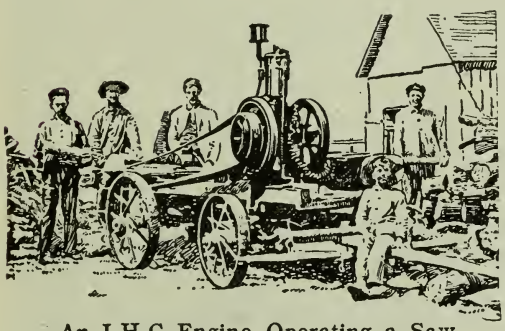
Don't Do an Engine's Work—Let an Engine Do Yours



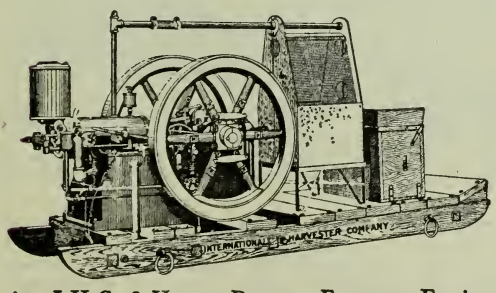
The Ever Ready I H C Engine Belted to an I H C Feed Grinder



Water When You Want It, With an I H C Pumping Outfit



An I H C Engine Operating a Saw



An I H C 6-Horse Power Famous Engine on Skids. Just one of many sizes and styles.

How often have you wished the pump would run itself and the woodsaw was automatic? Yet an I H C gasoline engine makes this possible—and more. It relieves you of the time-killing and back-breaking jobs, and makes the farm more profitable.

If you do any farming at all, your time and energy are worth more than the few pennies a day it costs to do your chores with an I H C engine.

I H C engines are made in so many sizes and types that you can get just the engine you want for your special needs. They are not only wonderfully serviceable and economical, but the few simple parts make them the most durable and the easiest to operate.

Vertical Tank-Cooled—2 and 3-H. P.
Vertical Air-Cooled—2 and 3-H. P.
Vertical Hopper-Cooled—2 and 3-H. P.
Vertical Semiportable—Tank, Hopper, or Air-Cooled—2 and 3-H. P.
Horizontal Air-Cooled—1-H. P.
Horizontal Tank-Cooled—4, 6, 8, 10, 12 15, 20, and 25-H. P.
Horizontal Hopper-Cooled—1, 2½, 4, 6, and 8-H. P.
Horizontal Semiportable Tank-Cooled—4, 6, and 8-H. P.
Horizontal Semiportable Hopper-Cooled—1, 2½, 4, 6, and 8-H. P.
Horizontal Mounting Engine, Tank-Cooled—4, 6, 8, 10, 12, 15,and 20-H. P.
Horizontal Mounting Engine, Hopper-Cooled—4, 6, and 8-H. P.
Horizontal Portable Engines, Tank-Cooled—4, 6, 8, 10, 12, 15, 20, and 25-H. P.
Horizontal Portable Hopper-Cooled—4, 6, and 8-H. P.
Vertical 2-Cylinder Engines—25 and 35-H. P.
Traction Engine—12, 15, 20, 25, and 45-H. P.
Sawing Outfits, Pumping Outfits, Spraying Outfits, Electric Light Outfits, Pump Jacks, etc.

Irrigation and Drainage

[Continued from Page 60]

that fineness of the soil is the main consideration whether farming with irrigation or by regular rainfall.

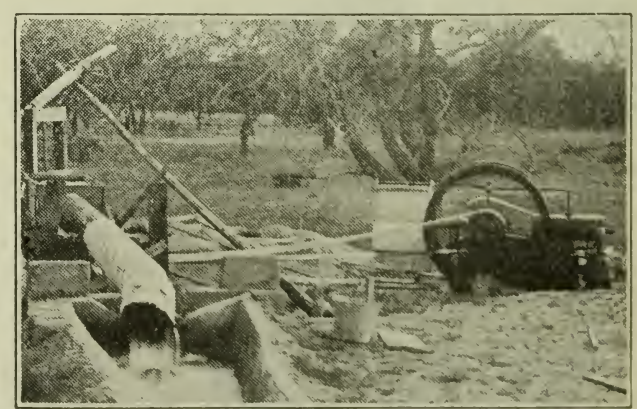
In General—There are in general, three systems by which land can be drained—(a) by tiling; (b) by perpendicular holes or wells dug to a stratum of sand or gravel; and (c) by dynamiting. Drainage under any system has about the same expense comparatively, but varies with conditions.

By Tiling—Tiling is done by ditches similar to those used for irrigation, except that in irrigation the water is turned on and carried over the surface, while in drainage, water is carried off through tiling underneath at a depth of from five to six feet. Tile is not only a benefit to the soil in draining off the surplus water, but it assists in washing the soil and carrying off alkaline substances; it also permits circulation of air through the ground, which adds much to the sweetness of the soil and to its general texture and friability.

Perpendicular Drainage—The second method of drainage is popularly known as perpendicular drainage. This is not as extensively used as the horizontal system, but there are many places needing drainage where no other system can be used. Drainage by the perpendicular or vertical system is accomplished by digging wells or vertical holes in the ground deep enough to strike any stratum of sand or gravel underneath the surface. When the stratum is reached the water is let out from the pool or lake and flows down through the holes and out through the stratum of sand or gravel until it finds its level in the creek bed or some other place. The vertical method of irrigation has been practiced in a number of places with success where low places, basins, or lakes have banks so high that horizontal drainage is impossible.

Drainage by Dynamiting—Dynamiting land is often used with good results where there is hard pan or cemented clay underlaid with sand or gravel. In many instances, water is found standing in fields covering plots of two or three acres on account of the hard condition of the surface of the subsoil. Drilling several holes to a depth of 8 feet at distances of one rod apart, putting in heavy charges of dynamite, connecting the holes by fuses and discharging simultaneously will, in most cases, solve the problem of wet spots in the field.

Makes Better Conditions of Health—The drainage of lands is a problem that nearly every farmer must meet, because of the fact that scarcely a farm is without a small pool or lake that needs drainage. The proper drainage of land not only prepares it for growing crops, but destroys breeding places for mosquitoes and various kinds of flies injurious to stock, and it certainly adds much to the general health of the community. Proper drainage cannot be overemphasized and it should be the aim of the modern farmer to make every square foot of land available and productive.



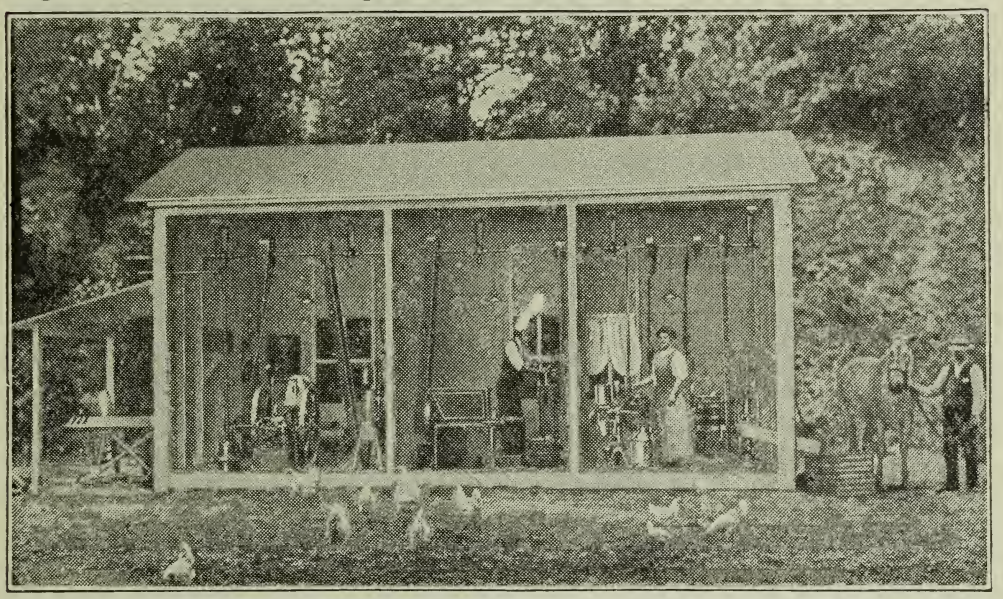
Irrigating plant of Lewis & Solseth, five miles northwest of Fowler, Colorado. I H C 20-H. P. engine and No. 6 centrifugal pump. Capacity 1,250 gallons per minute at 25-foot lift. Photo shows plant not yet completed, pumping about 800 gallons per minute against an 18-foot lift.

The Farm Power House

In the modern scheme of farming, economy of time and energy is of vast importance. Any convenience, any machine or arrangement which will bring about this economy, finds a place on the up-to-date farm. The gasoline engine has long been recognized as one of the most practical machines for saving time, money, and energy, but to realize its greatest advantages, the engine should be installed in a farm power house. With an installation of this nature, the farmer is in position to operate any or all of his machines under the most favorable conditions.

In planning a power house there are certain general principles which should be followed.

The engine should be installed in a separate room, or in a part which is partitioned off from the balance of the house. In the room with the engine may be installed a small dynamo, drill press, and grindstone. This room might be called the workshop.



An I H C Engine Installed to Provide a Practical Farm Power House

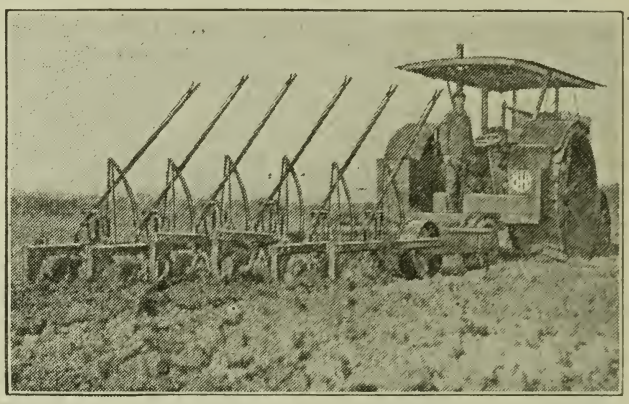
The remaining space of the power house should be divided into two rooms, one for the dust-producing machines, such as the sheller, grinder, fanning mill, etc., and the other room for the machines which must be kept absolutely clean, cream separator, churn, and any other machines which it is found advisable to install in this room. By belting the machines to line shafting suspended from the ceiling, any or all of the machines may be operated as desired.

In selecting an engine for the farm power house, bear in mind that it is advisable to select an engine of a little larger horse power than may at first be thought necessary. The experience of thousands of farmers is to the effect that they all find more work for the engine than they at first planned. This is because the practicability of the gasoline engine is hardly realized. It will operate any machines requiring power. For this reason it is well to select a size that will do all the work you have in mind and still leave a little power in reserve.

If you are interested in a farm power house, write The International Harvester Company of America at Chicago, asking them for a set of their farm power house plans. These plans give explicit instructions for building a practical power house, and show how to arrange and install the various machines.

The Modern Farm Horse

Just as the thresher has displaced the flail and the tramping oxen; as the binder has displaced the sickle and the cradle; as the hay loader and manure spreader are displacing the pitchfork; so the gasoline tractor is replacing the farm horse. Today the farmer's best horse is the gasoline tractor. It is his best horse because it will work day and night, if necessary, never gets tired—and eats only while it works.



I H C 25-Horse-Power Tractor on the Farm of Ed Sponseler, Kenton, Ohio

Long ago our manufacturers learned that to burn up energy in useless labor is pure waste. As a result we have labor-saving devices and machines of every description. All of our farmers have learned this lesson in some of their activities. Some of them have learned to apply it to all their work. Many others are just beginning to realize its truth and apply it to their farm work. To burn up energy in useless labor robs us of time and strength and does not add to our bank account.

To plow an acre of ground in the old way, the farmer must walk eight miles. To plow a square mile requires 5,200 miles of furrow. To plow a tract five miles square requires a furrow which would reach around the earth at the equator. Think of the useless waste of energy! Plowing with a gasoline tractor means a saving of from 50c to $1.00 in the cost per acre, and, besides, the walking is cut out. You see, it is possible to save both money and energy. It is not uncommon for a man with a 25-horse power tractor to plow, harrow, and roll from 12 to 15 acres in a day.

The tractor may be counted on for other things than plowing. It is the machine with the Big Pull. It will pull the binders, run the thresher or shredder, haul wagon loads of crops to market, and do other big heavy jobs of pulling.

Gasoline and kerosene have proved their right to work for the farmer. They are easily handled, always ready, thoroughly reliable, and, transportation, time, and other things considered, they are the cheapest. In each tiny drop of gasoline is stored an ocean of energy which needs but to be harnessed to be the farmer's biggest time and labor saver. The farmer who works without it, is burning up energy in useless labor. That means pure waste.

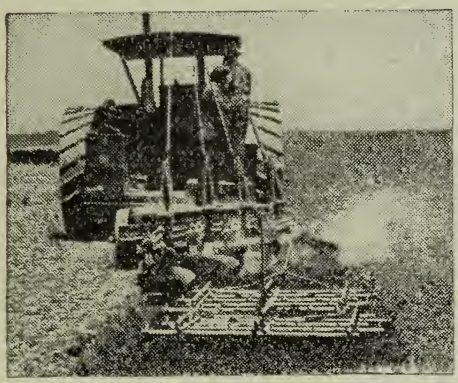
The gasoline tractor is the ever-ready, ever-reliable, all-day worker. Don't forget the "all-day" part of it. A tractor may deliver a large per cent of horse-power at the drawbar for a limited time, but—the question is:

Will it deliver this power all day?

Will it do the work, not for an hour, or even for a day, but every day?

Farmers are not expert machinists. If they were, they might not be good farmers. When a farmer buys a machine he wants one that will do the work and do it well. That is the only thing he buys it for. That is what I H C tractors are made for. That is why they are easy to understand and easy to operate. That is why they use gasoline or kerosene—the farmer's fuel.

Selecting a Gasoline Tractor



Plowing and Harrowing With an I H C tractor in Roumania

The one great big point that you should investigate most thoroughly before purchasing a tractor is reliability—the feature that will make your outfit a real all day worker—a 24-hour power.

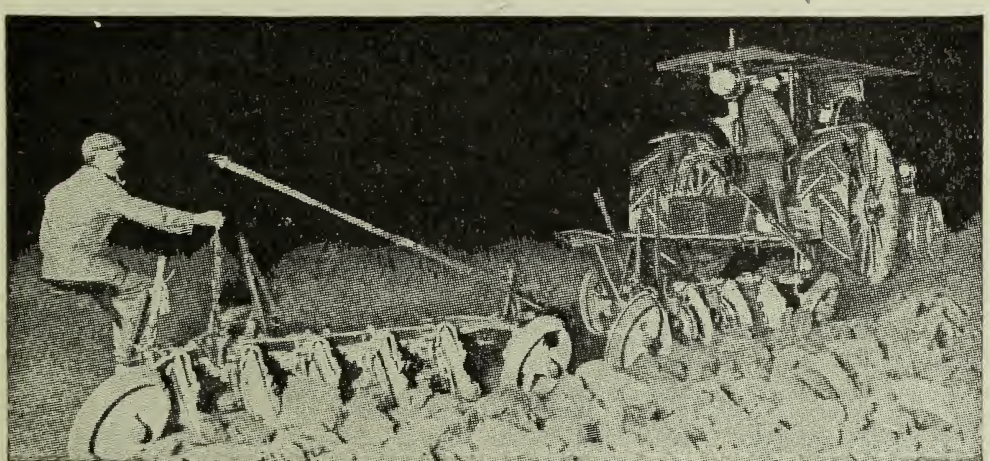
Judge the tractor according to the standards you apply in judging your farm team. Your good team is the one that goes into the field in the morning and keeps going all day. When you take the horses to the barn, you don't kick about how much they eat or how much water they drink—you figure they have earned it. If they were balky or got tired at the end of an hour's work, you would sell them.

Size up a tractor from the same viewpoint. Give fuel consumption, drawbar power, simplicity, appearance, design, and other points the proper consideration—not too much and not too little. But, convince yourself, first, that the tractor is a real all-day worker.

You won't find many tractors that are actual 24-hour powers. There is one, the I H C, which will make good from this standpoint any day you wish to try it out. When designers began work on the I H C tractor, they were given these instructions: "Remember that not every farmer is a mechanic; remember that he is not interested in all the theoretical points of gear cutting, power transmission, material stress, and so on. He won't exchange his money for an attractive, well-painted pile of junk—not if he knows it. He wants a tractor for one purpose—to take the place of horses. He wants a motive power that he can rely upon any time and all the time, that will work one or twenty-four hours a day, and that he can operate and keep in working order without the aid of an expert or recourse to a machine shop."

That's why the I H C tractor is a real 24-hour power—a tireless horse.

The I H C line of tractors includes several different styles in 12, 15, 20, 25, and 45 horse-power. The 45-horse power tractors are two-cylinder types; all others are one-cylinder.

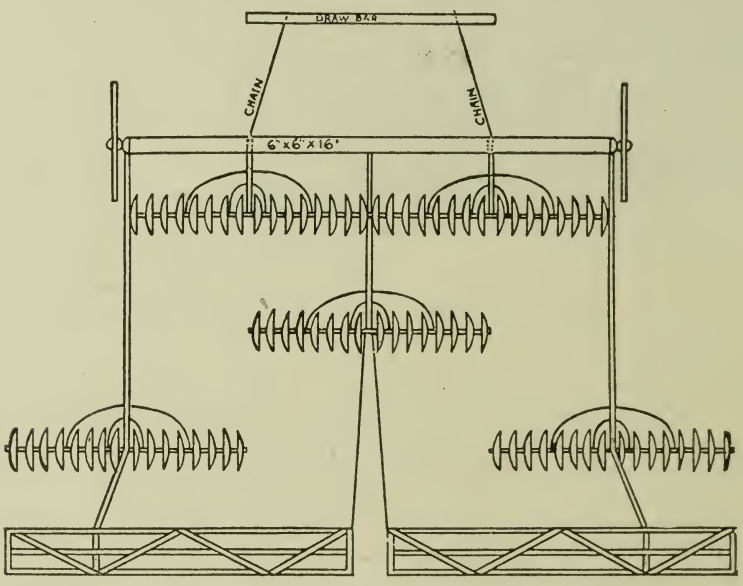


Flashlight Photograph of a Plowing Scene in Australia. This I H C 20-H. P. Tractor Equipped With Searchlight Was in Action Day and Night

Suggestions for Traction Engine Hitches

On this and the following page are reproduced, through the courtesy of the *Canadian Thresherman and Farmer*, Winnipeg, several practical tractor hitches designed and used by Canadian farmers.

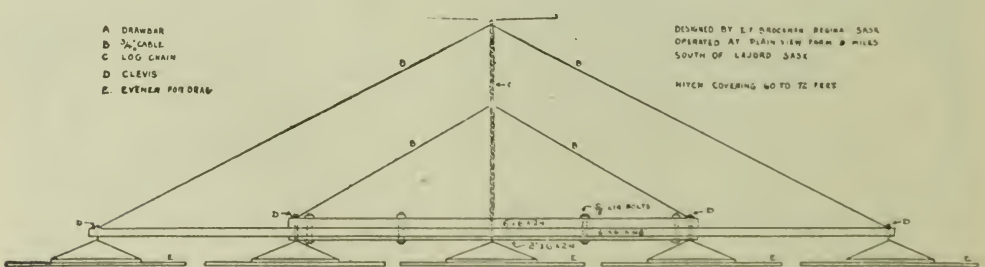
Plate No. 1—Disk Hitch



With this hitch, the disks and scrubbers are attached with ¾-inch wire cable and clevises—no wire or binder twine used. The engine may be easily attached and disengaged without disturbing the machines. For this reason there is very little time lost when the engine gets in soft spots.

With this hitch, two men and a tractor will do the work of 28 horses and 7 men double disking and scrubbing at one operation.

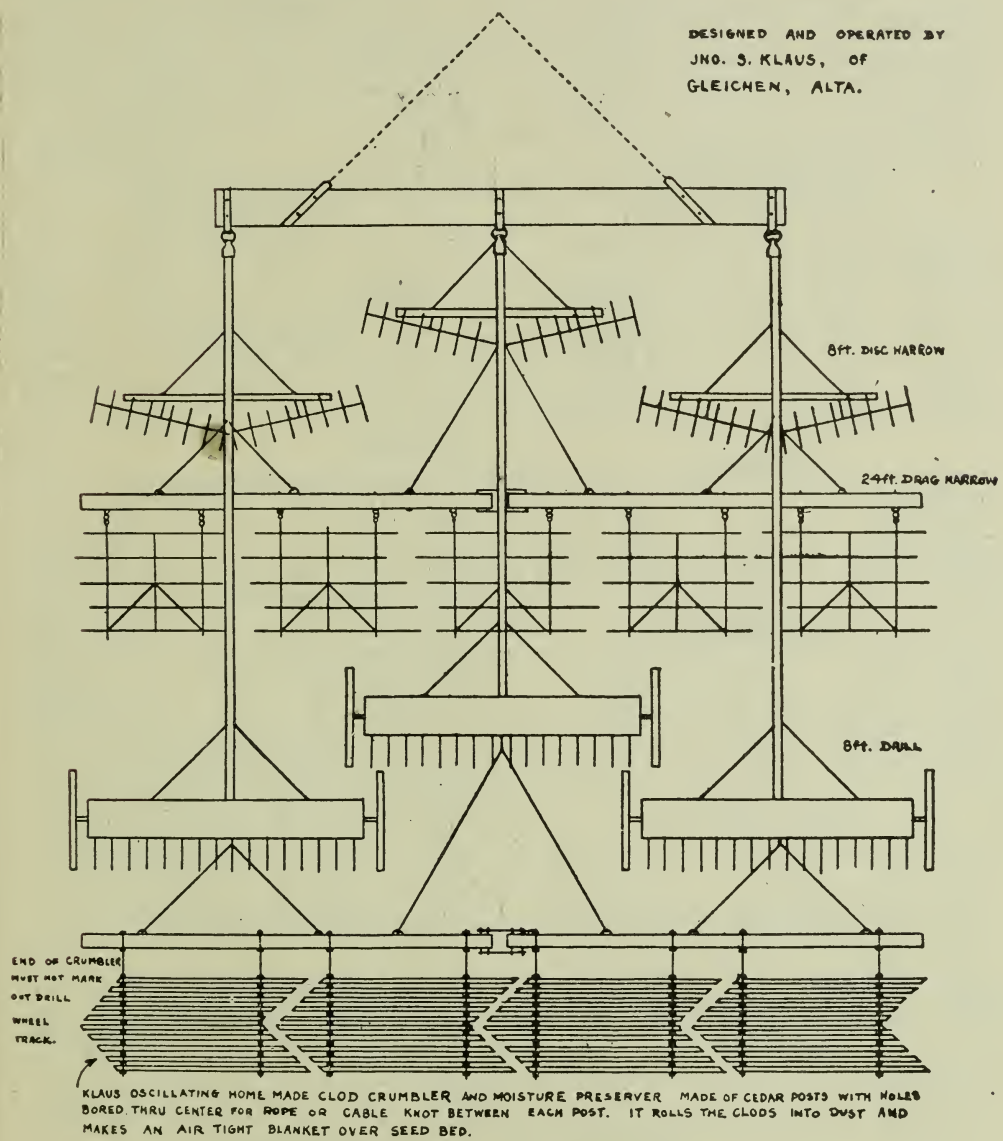
Plate No. 2—Drag Harrow Hitch



The design of this hitch is such that the draft comes evenly at all points. This outfit properly hooked up takes the place of 5 men and 20 horses. Note that the hitch is attached only at the drawbar, so that the engine is permitted to work freely and easily.

Plate No. 3

Disk, Drag, Drill, and Crumbler Hitch



Disk, Drag, Drill, and Crumbler Hitch

This hitch, in use by John S. Klaus of Gleichen, Alberta, shows one method of drawing three disk drills, 24 feet of drag harrow sections, three 8-foot disk drills, and a 24-foot home-made clod crumbler.

Weights and Measures Used in the United States

Troy Weight

24 grains.....1 pwt.
20 pwt.....1 ounce
12 ounces.....1 pound.

Used for weighing gold, silver, and jewels.

Apothecaries' Weight

20 grains.....1 scruple
3 scruples.....1 dram
8 drams.....1 ounce
12 ounces.....1 pound

The ounce and pound in this are the same as in Troy Weight.

Avoirdupois Weight

27 11/32 grains.....1 dram
16 drams.....1 ounce
16 ounces.....1 pound
25 pounds.....1 quarter
4 quarters.....1 cwt.
2,000 pounds.....1 short ton
2,240 pounds.....1 long ton

Dry Measure

2 pints.....1 quart
8 quarts.....1 peck
4 pecks.....1 bushel
36 bushels.....1 chaldron

Liquid Measure

4 gills.....1 pint
2 pints.....1 quart
4 quarts.....1 gallon
31½ gallons.....1 barrel
2 barrels.....1 hogshead

Square Measure

144 square inches.....1 sq. foot
9 square feet.....1 sq. yard
30¼ square yards.....1 sq. rod
40 square rods.....1 rood
4 roods.....1 acre
640 acres.....1 sq. mile

Time Measure

60 seconds.....1 minute
60 minutes.....1 hour
24 hours.....1 day
7 days.....1 week
28, 29, 30, or 31 days
1 calendar month
(30 days..1 month in computing interest.)
365 days.....1 year
366 days.....1 leap year

Circular Measure

60 seconds.....1 minute
60 minutes.....1 degree
30 degrees.....1 sign
90 degrees.....1 quadrant
4 quadrants, 12 signs, or 360 degrees.....1 circle

Long Measure

12 inches.....1 foot
3 feet.....1 yard
5½ yards.....1 rod
40 rods.....1 furlong
8 furlongs.....1 statute mile
3 miles.....1 league

Cloth Measure

2¼ inches.....1 nail
4 nails.....1 quarter
4 quarters.....1 yard

Paper Measure

24 sheets.....1 quire
20 quires.....1 ream (480 sheets)
2 reams.....1 bundle
5 bundles.....1 bale

Surveyor's Measure

7.92 inches.....1 link
25 links.....1 rod
4 rods.....1 chain
10 sq. chains or 160 sq. rods.....1 acre
640 acres.....1 sq. mile
36 sq. miles (6 miles square).....1 township

Cubic Measure

1,728 cubic in. 1 cubic foot
27 cubic ft. 1 cubic yard
128 cubic ft. 1 cord (wood)
40 cubic ft. 1 ton (shipping)
2,150.42 cubic in. 1 standard bu.
231 cubic in. 1 standard gal.
1 cubic ft. about 4-5 of a bu.

Mariner's Measure

6 feet.....1 fathom
120 fathoms.....1 cable length
7½ cable lengths 1 mile
5,280 feet.....1 statute mile
6,085 feet.....1 nautical mile

Miscellaneous

3 inches.....1 palm
4 inches.....1 hand
6 inches.....1 span
18 inches.....1 cubit
21.8 inches.....1 Bible cubit
2.5 feet.....1 military pace

Length of Germ Life in Various Seeds

Vegetables	Years	Vegetables	Years	Vegetables	Years
Cucumber	8 to 10	Mustard	3 to 4	Parsley	2 to 3
Melon	8 to 10	Okra	3 to 4	Parsnip	2 to 3
Pumpkin	8 to 10	Rhubarb	3 to 4	Pepper	2 to 3
Squash	8 to 10	Spinach	3 to 4	Tomato	2 to 3
Cauliflower	5 to 6	Turnip	3 to 6	Egg Plant	1 to 2
Artichoke	5 to 6	Asparagus	2 to 3		
Endive	5 to 6	Beans	2 to 3		
Pea	5 to 6	Carrots	2 to 3	**Herbs**	**Years**
Radish	4 to 5	Celery	2 to 3	Anise	3 to 4
Beets	3 to 4	Corn (on cob)	2 to 3	Caraway	2
Cress	3 to 4	Leek	2 to 3	Summer Savory	1 to 2
Lettuce	3 to 4	Onion	2 to 3	Sage	2 to 3

Time Required for Garden Seeds to Germinate

	Days		Days		Days
Bean	5 to 10	Corn	5 to 8	Parsnip	10 to 20
Beet	7 to 10	Cucumber	6 to 10	Pepper	9 to 14
Cabbage	5 to 10	Endive	5 to 10	Radish	3 to 6
Carrot	12 to 18	Lettuce	6 to 8	Tomato	6 to 12
Cauliflower	5 to 10	Onion	7 to 10	Turnip	4 to 8
Celery	10 to 20	Pea	6 to 10		

Quantity of Seeds Necessary to Sow an Acre

Asparagus	5 lbs.	Cress, water	3 lbs.	Parsnip	6 lbs.
Beans, dwarf	1½ bus.	Cress, upland	3 lbs.	Peas	2 bus.
Beans, pole	12 qts.	Egg Plant	*1 oz.	Potato (cut tubers)	8 bus.
Beet	6 lbs	Grass	4 bus.	Pumpkin	5 lbs.
Buckwheat	1 bu.	Kale, or sprouts	4 bus.	Radish	10 lbs.
Cabbage	¼ bu.	Lettuce	*1 oz.	Rye	1½ bus.
Carrot	4 lbs.	Melon, musk	3 lbs.	Sage	10 lbs.
Cauliflower	*1 oz.	Melon, water	5 lbs.	Spinach	12 lbs.
Celery	*½ oz.	Mustard	½ bu.	Squash, bush	6 lbs.
Clover	16 lbs.	Onion	6 lbs.	Squash, running	4 lbs.
Clover, crimson	16 lbs.	Onion seed for sets	30 lbs.	Tomato	¼ lb.
Corn	10 qts.	Onion sets	12 bus.	Turnip	2 lbs.
Cowpea	2 bus.	Orchard grass	30 lbs.	Vetch	1 bu.
Cucumber	2 lbs.				

*Per 1000 plants

Length of Time Trees and Bushes Will Bear

	Years		Years		Years
Apple	25 to 40	Gooseberry	20	Plum	20 to 25
Blackberry	6 to 14	Peach	8 to 12	Raspberry	6 to 12
Currant	20	Pear	50 to 75	Strawberry	1 to 3

Usual Distance for Planting Trees

	No. feet each way		No. feet each way		No. feet each way
Apples	30 to 40	Plum	16 to 20	Apricots	16 to 20
Apples, dwarf	10 to 15	Peaches	16 to 20	Nectarines	16 to 20
Pears	20 to 30	Cherries	16 to 25	Quinces	8 to 14
Pears, dwarf	10 to 15				

Statutory Weights of the Bushel

STATE OR TERRITORY	Wheat	Rye	Oats	Barley	Buckwheat	Shelled corn	Corn on cob	Cornmeal, unbolt	Bran	Malt	Potatoes, Irish	Potatoes, sweet	Carrots	Onions	Turnips, English	Beets	Beans	Peas	Apples	Dried apples	Dried peaches	Castor beans	Flaxseed	Hemp seed	Millet seed	Timothy seed	Blue grass seed	Hungarian grass sd.	Clover seed
United States	60	56	32	48	42	..	..	48	..	34	60	..	..	..	..	..	..	60	..	..	..	50	56	..	..	..	..	..	..
Alabama	60	56	32	47	..	56	70	48	..	..	60	55	..	..	55	..	60	60	..	24	33	..	..	..	..	..	..	..	..
Alaska	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Arizona	60	56	32	45	..	..	..	..	..	..	..	..	..	..	..	..	55	..	..	..	..	..	..	..	..	..	..	..	..
Arkansas	60	56	32	48	52	56	70	48	20	..	60	50	..	57	57	..	60	60	50	24	33	..	56	..	50	60	14	..	60
California	60	54	32	50	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colorado	60	56	32	48	52	..	70	50	..	..	60	..	..	57	..	..	60	..	..	..	..	..	..	44	..	45	14	..	60
Connecticut	60	56	32	48	48	..	..	50	20	..	60	54	50	52	50	60	60	60	48	25	33	..	55	..	..	..	..	..	60
Delaware	60	..	..	..	..	..	..	48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dist. Col	60	..	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Florida	60	56	32	48	..	56	70	48	20	..	60	60	..	56	54	..	60	..	48	24	..	48	..	..	50	..	..	..	..
Georgia	60	56	32	47	52	56	70	48	20	..	60	55	..	57	55	..	60	60	..	24	33	..	56	44	..	45	14	..	60
Hawaii	60	56	32	48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Idaho	60	56	36	48	42	..	..	..	..	..	60	..	..	..	..	..	..	..	45	28	28	..	56	..	..	..	..	..	60
Illinois	60	56	32	48	52	56	70	48	20	38	60	50	..	57	55	..	60	..	..	24	33	46	56	44	..	45	14	..	60
Indiana	60	56	32	48	50	56	68	50	..	35	60	55	..	48	55	..	60	..	..	25	33	46	..	44	50	45	14	..	60
Iowa	60	56	32	48	52	56	70	..	20	..	60	46	..	57	..	..	60	..	48	24	33	46	56	44	50	45	14	50	60
Kansas	60	56	32	48	50	..	70	50	20	32	60	50	..	57	55	..	60	..	48	24	33	46	56	44	50	45	14	50	60
Kentucky	60	56	32	47	56	56	70	50	20	..	60	55	..	57	60	..	60	60	..	24	..	45	56	44	50	45	14	50	60
Louisiana	60	56	..	48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maine	60	50	32	48	48	..	..	50	..	..	60	..	50	52	50	60	60	60	44	..	..	..	..	..	..	..	..	..	..
Maryland	..	..	26	..	..	..	..	..	..	..	56	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Massachusetts	60	56	32	48	48	50	..	50	20	..	60	54	50	52	..	..	60	60	48	25	..	..	55	..	..	45	..	..	60
Michigan	60	56	32	48	48	56	70	50	..	..	60	56	..	54	58	..	60	60	48	22	..	46	56	44	50	45	14	50	60
Minnesota	60	56	32	48	50	56	70	..	..	..	60	55	45	52	..	50	60	60	50	28	..	..	..	50	48	45	14	48	60
Mississippi	60	56	32	48	48	56	72	48	20	38	60	60	..	57	55	..	60	60	..	26	..	46	56	44	50	45	14	50	60
Missouri	60	56	32	48	52	56	70	50	20	38	60	56	50	57	42	..	60	60	48	24	..	46	56	44	50	45	14	48	60
Montana	60	56	32	48	52	56	70	50	20	30	60	..	50	57	..	50	60	60	45	..	..	..	56	44	..	45	14	50	60
Nebraska	60	56	32	48	52	56	70	50	20	30	60	50	..	57	55	..	60	60	..	24	..	46	56	44	50	45	14	50	60
Nevada	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New Hampshire	60	56	32	..	..	..	..	50	..	..	60	..	..	..	..	..	62	60	..	..	..	..	..	..	..	..	..	..	..
New Jersey	60	56	30	48	50	..	..	..	..	..	60	54	..	57	..	..	60	60	50	25	..	..	55	..	..	..	..	..	64
New Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New York	60	56	32	48	48	..	..	50	20	..	60	54	50	57	..	..	60	60	48	25	..	..	55	..	..	45	..	..	60
North Carolina	60	56	32	48	50	..	..	48	..	..	..	..	..	..	..	..	..	60	..	..	..	..	55	..	..	..	..	..	60
North Dakota	60	56	32	48	42	56	70	..	20	..	60	46	..	52	60	60	60	60	50	..	..	..	56	..	50	45	..	..	60
Ohio	60	56	32	48	50	56	68	..	..	34	60	50	50	55	60	56	60	60	50	24	..	..	56	44	50	45	..	50	60
Oklahoma	60	56	32	48	42	56	70	..	20	..	60	46	..	52	60	60	60	60	..	..	..	..	56	..	..	42	..	..	60
Oregon	60	56	32	46	42	..	..	..	..	..	60	..	..	..	..	..	..	..	45	28	..	..	..	..	..	..	..	..	60
Pennsylvania	60	56	32	47	48	..	..	..	..	..	56	..	..	50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60
Rhode Island	60	56	32	48	48	56	70	50	20	38	60	54	50	50	50	50	60	60	48	25	..	46	56	44	50	45	..	50	60
South Carolina	..	..	..	..	..	..	..	48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Dakota	60	56	32	48	42	56	70	..	20	..	60	46	..	52	60	60	60	60	..	..	..	..	56	..	..	42	..	..	60
Tennessee	60	56	32	48	50	56	70	48	20	..	60	50	50	56	50	50	60	60	50	24	..	46	56	44	50	45	14	48	60
Texas	60	56	32	48	42	56	70	..	20	..	60	55	..	57	55	..	60	..	45	28	..	..	56	44	50	45	..	48	60
Utah	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vermont	60	56	32	48	48	56	..	..	..	..	60	..	50	52	60	60	62	60	46	..	..	..	..	..	..	45	..	..	60
Virginia	60	56	30	48	52	56	70	50	..	38	56	56	..	57	55	..	60	60	..	28	32	..	56	44	50	45	14	48	60
Washington	60	56	32	48	42	..	..	..	..	..	60	..	..	..	..	..	..	..	45	28	..	..	56	..	..	..	..	..	60
West Virginia	60	56	32	48	52	..	..	..	..	..	60	..	..	..	..	..	60	..	..	25	..	..	56	..	..	45	..	..	60
Wisconsin	60	56	32	48	50	..	..	50	20	34	60	54	50	57	42	50	60	60	50	25	..	..	56	44	50	45	..	48	60
Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

NOTE.— Rye meal takes 48 pounds to the bushel in the District of Columbia and 50 in Maine, Massachusetts, New York, Rhode Island, and Wisconsin. Peeled dried peaches take 38 pounds to the bushel in Alabama and 40 in Virginia. The metric system is used in the Philippines and Porto Rico.

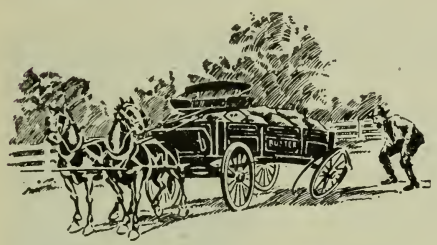
Deviations in Laws of Weights and Measures

With such diversity of weights and measures it is apparent that joint action should be taken by the various states with a view to adopting uniform laws with reference to weights and measures, and even now conferences of many interested departments, municipal and state, are being held under the lead of the Director of the Bureau of Standards of the United States Government.

Points of a Good Farm Wagon

Axles—Black hickory of the highest grade makes the best axle.

Running Gears—Oak should be used throughout and the parts should be soaked in boiled oil to protect them from moisture. The parts should be carefully ironed.



Quality Is Remembered Long After Price Is Forgotten

Skeins—Skeins should be heavy and designed especially for strength, width of throat, and correct taper.

Skein Boxes—The skein boxes should fit the skeins closely and accurately to retain the grease and to produce light draft.

Hubs—Hubs should be made of the best quality white oak as first choice or Maine birch as second choice. They should be carefully air seasoned to prevent spiltting and checking as far as possible.

Wheels—A-grade hickory or oak spokes only should be used and they should be driven in hot glue. Rims should be of oak and all parts should be thoroughly soaked in boiled oil, before the tires are set, to exclude moisture and prolong the life of the parts.

Tires—Tires should be steel and set while hot to prevent them coming loose.

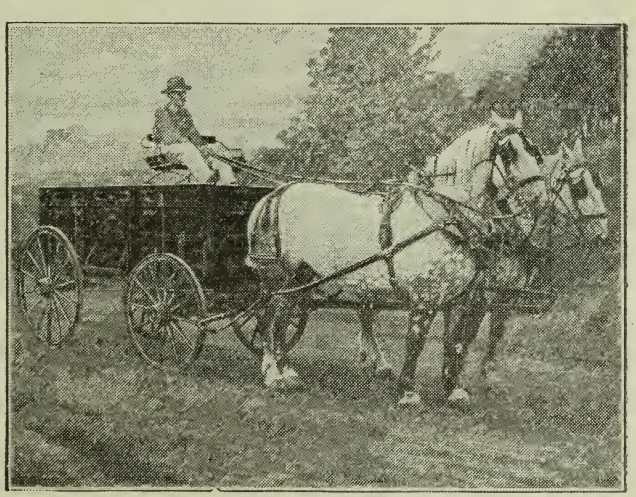
Boxes—Boxes should be very carefully made from the best quality of box board lumber. The bottom should have a double thickness of material where it rests on the front and rear bolster, and bottom boards should be tongued and grooved. It should be carefully and thoroughly ironed.

Painting and Finishing—No expense should be spared in the preparation of the paint. Good painting lends attractiveness and durability.

Warranty—By all means buy a wagon which is warranted by a responsible company.

I H C Wagons Warranted

Examine an I H C Weber or Columbus wagon, then you will understand why we can protect purchasers with an iron-clad warranty against any breakage due to defective workmanship or material, which may occur within a year. Every point which you would expect to find on a farm wagon built to your order is embodied in the Weber and Columbus. The good old standard of wagon construction which admitted no deception or substitution still obtains in the I H C wagon factories.



When You Buy a Weber or Columbus You Get a Good Wagon

When to Plant Seeds

The seeds listed below are divided into two classes according to the temperature at which they will germinate and can be safely planted.

Class I. includes seeds that will sprout in an average temperature of 45 degrees in the shade, which is about the temperature at the time peach and plum trees blossom.

Class II. includes those seeds which will germinate at an average temperature of 60 degrees in the shade, the temperature about the time when the apple trees bloom.

Class I.

Beet	Red clover	Parsnip	Radish	Carrot	Endive
Oats	Crimson clover	Onion	Turnip	Cabbage	Kale
Rye		Pea	Spinach	Cauliflower	Lettuce
Wheat	Grasses	Barley	Parsley		

These can be planted with safety in the spring as soon as the ground can be prepared, and some of them, if planted in the fall, live through the winter.

Class II.

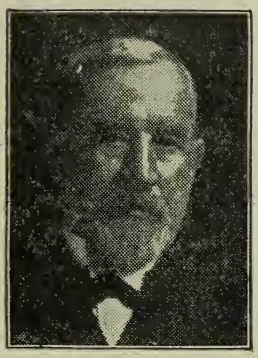
Alfalfa	Cotton	Cucumber	Pepper	String bean
Cowpea	Egg plant	Pumpkin	Soy bean	Melon
Corn	Squash	Tomato	Pole bean	Okra

Usual Weights per Bushel of Seed

Kind of Seed	Pounds per Bushel
Alfalfa	60
Amber cane	45–60
Bent grass	
Creeping	15
Rhode Island	15
Bermuda grass	15
Bird's-foot clover	60
Bitter vetch	60
Blue grass	
Canada	14–20
Kentucky	14–30
Texas	14
Broad bean	50–60
Brome, awnless	10–14
Broom corn	45–60
Burr clover	
Hulled	60
Unhulled	8–10
Spotted	60
Castor bean	46–60
Clover	
Alsike	60
Crimson	60
Egyptian	60
Mammoth	60
Red	60
White	60
Cowpea	56–60
Crested dog's tail	14–30
Fescue	
Hard	12–60
Meadow	14–24
Red	12–15
Sheep's	16
Tall	14–24
Various leaved	15
Flat pea	50–60
Flax	48–56
Hemp	40–60
Japan clover	
Hulled	60
Unhulled	18–25
Johnson grass	14–28
Kaffir corn	50–60
Lentil	60
Lupine, white	50–60
Meadow foxtail	7–14
Meadow grass	
Fowl	11–14
Rough-stalked	14–20
Wood	14–24
Millet	
Barnyard	30–60
Broom corn	45–60
Common	48–50
German	48–50
Golden Wonder	48–50
Hungarian	48–50
Pearl	48–56
Milo maize	50–60
Oat grass	
Tall	10–14
Yellow	7–14
Orange cane	45–60
Orchard grass	10–18
Pea	
Field	60
Garden, smooth	60
Garden, wrinkled	56
Peanut	20–30
Rape, winter	50–60
Redtop	
Chaff	10–14
Fancy	25–40
Rescue grass	12–28
Rice	43–45
Rye grass	
English	28
Italian	12
Sainfoin	14–32
Serradelia	28–36
Soy bean	58–60
Spelt	40–60
Sunflower	24–50
Sweet clover	
Hulled	60
Unhulled	33
Sweet corn (according to variety)	36–56
Sweet vernal, perennial	6–15
Teosinte	40–60
Timothy	45
Velvet bean	60
Vetch	
Hairy	50–60
Spring	60
Water grass, large	14
Wild rice	15–28
Yellow trefoil	60

Sanitation in the Country

Henry Wallace, Editor Wallace's Farmer,
Des Moines, Ia.



It is now generally conceded that whatever other causes may have combined to increase the cost of living, one of the leading causes has been the decreasing supply of farm products combined with an increased demand. There are too many people living in town, too few living in the country; too many food consumers, too few food producers.

It is also generally conceded that labor is the limiting factor in crop production. Notwithstanding the fact that the disk has superseded the harrow; the one and two row cultivator, the old-fashioned single and double-shovel plow; the binder, the sickle and cradle; the mower, the scythe; the horse rake, the hand rake; the hay loader, the fork; the corn binder, the old corn knife—notwithstanding all these wonderful improvements in modern machinery, which multiply the efficiency of labor many fold, the amount of crops in the United States is largely limited by the supply of skilled labor on the farms. Improved machinery, while multiplying the efficiency of the individual worker, reduces the number of workers by practically excluding from farm work all but the farm born and farm bred, and those born and bred in practically the same environment as that in which the work is to be done.

To increase rural population, train the young to farm work, keep them in vigorous health, imbue them with the farm spirit, and then keep them on the farm is a problem that interests and concerns the townsman quite as much as it does the farmer himself.

In sections where rotation of crops renders stock growing and improved farm machines necessary, we cannot use the labor that comes to us from southern Europe. We are now getting but little from northern Europe and the British Isles. We cannot use the Oriental, nor can we use the town "back-to-the-lander" unless we get him young. The farm must, therefore, grow its own labor, and that of the highest efficiency—physical, mental, and moral.

The farm should be the healthiest place in the land; but unfortunately it is not. There is no lack of sunshine, and outside the home, there is no lack of pure air. There need be no lack of pure wholesome food, and certainly, there is no lack of exercise. The main cause of sickness and death and of inefficiency in the survivors is lack of sanitation in country homes. It was my privilege as a member of the Country Life Commission appointed by President Roosevelt to investigate this subject over the length and breadth of the United States.

To my great surprise, I learned that about one-fifth of the children of what used to be known as the "poor white" and who are now known as the one-mule farmer, on the sandy soils of the South, notably on the Atlantic littoral, die in infancy from the effects of foot-itch, toe-itch, ground-itch, as it is variously called, due to a parasite which breeds in human excrement and enters the system through the feet. (This parasite completes its life history in about two months.) It also decreases the efficiency of the adult from 20 to 50 per cent by decreasing the red corpuscles of the blood. It does not affect people living in cities or towns who wear shoes and have sanitary

outdoor water closets or modern conveniences in the home. It is to check the ravages of this disease and thus increase the supply and efficiency of farm labor in the southern states, where it is so greatly needed, that Mr. Rockefeller has given a million dollars into the hands of scientists competent to deal with the problem. In the mountain sections of these states we found the numbers and efficiency of the population greatly decreased by the prevalence of typhoid fever and consumption. In fact, typhoid fever is now recognized as largely a rural disease, and as a rule is rarely found in cities except in the slums and places where there is the greatest lack of sanitation.

In the corn belt states, we found the country slaughterhouse usually somewhere near the town, at the head of a slough—each slaughter shop at the head of a different slough, never grouped together. To this the farmer takes his cattle which he suspects are tuberculous and which he fears to take to the city slaughterhouse under government inspection. The butcher feeds the offal of these cattle to his hogs, which inevitably become tuberculous; and as there is no government inspection, the flesh of both hogs and cattle is sold in the neighboring town. These country slaughterhouses are always infested with rats, and as there is a small percentage of trichinosis among the hogs, the rats, being the natural hosts of the trichina, carry the disease to neighboring farms, where the chickens, in their craving for animal food, especially during the winter season, devour the carcasses of the slaughtered rats. It is fortunate that we cook our chickens.

The great source of death and inefficiency in the country, however, is the general insanitary condition of the farm home. The farmer living in an insanitary farm home is especially liable to typhoid fever and consumption, the two great scourges of the rural districts.

Typhoid fever is generally due to impure water; and the water is generally rendered impure by reason of an open privy, from which the impurity enters the well by surface wash, or by seepage underground. It may also be carried by flies from some place in the neighborhood where there is a case of typhoid fever. Both these diseases are now well understood to be germ diseases. It is comparatively easy to avoid typhoid fever.

It is not so easy to avoid consumption, for the reason that there is more or less tuberculosis among the cattle on a considerable per cent of the farms. Where there is tuberculosis among the cattle, there is tuberculosis among the hogs and the chickens. In fact, the entire country is so infected with tuberculous germs that the main effort should lie in the direction of so increasing the vitality of the individual that the system can throw off the infection.

The reason why so many farmers' children, and especially girls, are affected with tuberculosis is that there is lack both of sunlight and ventilation in the average farm home. This could be easily remedied if farmers only understood the necessity for pure air and sunlight, as well as pure food and exercise. While no lack of ventilation will in itself produce tuberculosis, the lack of vitality due to an insufficient supply of fresh air, especially at night, renders the system unable to resist the germ when introduced.

The primitive country home was better ventilated than the modern house. It was made of timber, much of it green, which, therefore, shrank and there was no especial need of providing for ventilation, particularly as most of the houses had fireplaces. In my boyhood it was a common remark that a new house meant a death in the family. This was probably a superstition and yet most superstitions have a foundation of fact. The fact was that the builder built then, as he does now, for economy of heating, and for looks, and never thought of the necessity of supplying plenty of fresh air, especially in the sleep-

ing rooms at night. All this is easily remedied, and we briefly sum up what is essential to the sanitary country home, a home in which the boys and girls may grow up into vigorous and sturdy manhood and womanhood.

First, there should be proper drainage to the cellar, and this drainage should be put in before the foundation of the house is laid. The tile should be two feet under the cellar floor. The cellar should be cemented. It is useless to cement an undrained cellar, for the pressure of the water outside in a wet season will break the cement.

Second, provision should be made for ventilation, particularly of the sleeping rooms. A chimney in the center of the house, commencing in the cellar, with a brick or two left out at the bottom and also on each floor, and the opening covered with perforated iron, will draw off the air which has been deprived of its oxygen by breathing. Air can be introduced by lowering the top sash of the window, or by using muslin instead of a sash, thus admitting pure air without a draft.

Where there are modern improvements—and sooner or later these will be found in all country homes—including bathroom and sanitary closet, the waste substances can be washed into a septic tank, from which the water flows chemically pure. (It is not necessary to explain the philosophy of this now.) Meanwhile, until these modern improvements are introduced, the privy should be removed from the vicinity of the well, placed lower than the well, if possible, and with no connection by reason of sandy streaks in the under soil. As long as farmers use surface wells, these should be curbed with stone or brick and protected from wash and the entrance of small animals.

One other thing is quite essential, and that is that the farm home should be screened against flies. Flies breed in dung, a fact well known to the ancient Philistines, who worshiped Beelzebub, the fly-god. The modern Beelzebub loves filth, the sore shoulders of horses, and the privy vault, and has the bad habit of not wiping its feet. The hauling out of the manure as fast as made, the closed privy disinfected daily with dry earth, or copperas, or lime, will frequently save the family from typhoid fever, to say nothing of adding to the peace and comfort which should be in every farm home.

If there were no other reasons involved and no other considerations than the scarcity of labor, we cannot afford the loss suffered by the farm folk by reason of lack of sanitation in the farm home.

Average Periods of Incubation

Chickens	20–22 days	Guinea fowls	28 days
Geese	28–34 days	Pheasants	25 days
Ducks	28 days	Ostriches	40–42 days
Turkeys	27–29 days		

Average Periods of Gestation

The period of gestation in animals varies considerably, but the following is an average period based on a long series of observations:

Elephant	2 years	Goat	5 months
Camel	11–12 months	Pig	3½ months
Ass	12 months	Bitch	9 weeks
Mare	11 months	Cat	8 weeks
Cow	9 months	Rabbit	30 days
Sheep	5 months	Guinea pig	65 days

Beautifying the Farm

By J. E. Wing, Expert Agriculturist.

There was a time not long ago when men took land, new, raw, and sought to make a living thereon. These men had little capital; stern economy made them "get along" as best they could. They built cheaply, their buildings placed as they happened. There was little or no regard for permanence or convenience, and, least of all, for beauty of form or arrangement.

Let us outgrow that. "Farmin'" has become Agriculture. There is now no doubt as to whether it pays or not. Agriculture is very profitable now. Usually, farms pay best that have on them the best buildings.

Let us take a piece of land clear of buildings and consider how we would arrange it so as to be most convenient, sanitary, and beautiful. Some of us can begin new; some of us can rearrange old buildings.

The farmhouse should be well back from the highway. It should never be closer than 100 feet and it is best if it can be back 400 feet. Put it, if you can, on a little elevation overlooking the surrounding region. Usually, I would not put the house away from the highway. There are large farms where it is well to get in the center, but there is human interest in seeing the highway. Further, if you achieve aught in your planting and building you should share it with passers-by. There is true missionary work in doing that, and pleasure aswell. We will not do things very well unless we feel that others see what we do.

The farmer's ideal home setting and lawn is to put the house in the midst of a little meadow of two to ten acres. This can be kept mowed with the horse mower and will be a source of profit as well as beauty. It may be in timothy, Kentucky blue grass, or almost any sort of grass. It may be sown to alfalfa, except the parts near the house, which should be set in blue grass. Trees may be planted in this meadow. They should not be irregularly scattered over it, but should be planted with a definite plan, leaving a wide, open, unbroken expanse, with trees in clumps or fringes at the borders. The ideal lawn is a lake of grass with shores of trees and shrubs. This is both most beautiful and most economical, since there is no loss of the meadow land.

The drive to the house should follow such natural lines as one would take in driving from the front gate to and beyond the house. It is better if it is curving, but the curves should be placed with reason; and in the points about which the drive turns should stand trees or groups of shrubs that would indicate a reason for the curves. There should be two drives: one past the dwelling and on to the stables; the other, direct from the highway to the barnyard. This last will need fencing, as animals will be driven through it.

Planting Trees

Consider carefully the trees you plant. Trees pay—good trees. They will pay increasingly as time goes on. They pay in shutting off the cold winds of winter. Still air is never cold. The gales of winter carry off the profits of feeding. Shelter belts and groves make artificial climates. If one shuts off the wind, it is as though he had moved his farm and his stock a hundred, two hundred, maybe five hundred, miles south.

Especially do trees pay on account of their beauty—and the best trees are most beautiful. It is time we ceased planting trees of no worth except for fuel; we can grow good trees almost as readily.

Cottonwood and box elder we have planted too long. Yet cottonwood is not worthless; it makes fair lumber when kept dry. Box elder makes good fuel. But let us begin setting out valuable trees—trees that will, year by year grow increasingly in value.

Suppose it is true that your grandson has the harvest, what of that? You will enjoy the things growing, and they will enormously increase the value of your land, if you set out the right kind. Any kind will add beauty to your farm. But life is too short, after all, to do things not worth while. Choose a good variety.

For the corn belt and southward, the best trees in the writer's judgment are, in the order named: First, the cypress (Taxodium distichum); next, the hardy catalpa (Catalpa speciosa); then white ash, white pine, cottonwood, white willow, European larch (this, maybe, ought to have a higher place), Scotch pine, red or slippery elm. A small list? Yes, but all money-makers—all hardy, healthy, beautiful trees. In some localities one will be more valuable than another; they are mentioned nearly in the order of their true worth. Here are a few useless trees: Norway spruce—except for windbreak; if you want a spruce, choose the white spruce, not the Norway; box elder and soft maple, of not much value except for fuel; Balm of Gilead, and all sorts of poplars, short lived and of no especial value except for fuel. The Carolina poplars do furnish shade while the better, slower growing varieties are developing. It is sometimes well to alternate poplars with elm or hard maple. The poplars will provide immediate shade and will die down and be out of the way by the time the hardier trees attain any considerable size.

Now to describe briefly these trees. Cypress is a new tree to the farmer, yet tested north for 150 years or more. It is the grandest hardy conifer, grows 150 feet high and with a diameter of 8 feet. It outgrows every other useful tree after it gets started. It is beautiful when young and gets finer as it grows old. It grows always exactly erect and needs no training except to take off a few lower branches. Why has it not been planted more? Because nurserymen found it slow to start in nursery; they are now offering young trees at reasonable prices. At St. Louis, in Shaw's Gardens, where every tree known to be hardy in North America was planted, the cypress has outgrown every other tree, and is now the most beautiful of all. Furthermore, it is the one tree that went unscathed through the tornado that devastated that town. It sways and bends before the storms and is seldom broken. In a century it will make a finer tree, probably, than any other in America. In 50 years it will outgrow anything except cottonwood and soft maple. Its wood is used for tanks, silos, and interior finish of houses. The cypress does not like swampy land in the north. Even in the south it grows best on dry soil.

As a young tree, catalpa speciosa outgrows cypress and almost any other tree. If the true speciosa variety is planted it makes a large and very valuable tree. The common scrub catalpa often seen is of little value. Catalpas for a term of 20 to 40 years make rich profit for careful planters. They ought not to be set too close, need thinning, cultivation, and pruning for a few years. The late development of the catalpa industry includes growing the trees for turning purposes, baseball bats, fork handles, carriage stock, etc. Nothing else seems as good. Culls make good fence posts.

White ash is well known; it grows well and rapidly, makes admirable timber, is healthy, hardy, and profitable. More of them should be planted.

White pine is for a long term; it grows splendidly in some soils and is healthy and gloriously beautiful. Plant a few and see how they like your soil. It thrives from Mississippi to Canada and northward, but prefers certain kinds of soil; it will, however, usually grow very rapidly on any good corn soil. An acre of white pines on a farm ought to add $1,000 to its value if a prospective buyer has a soul above the pork barrel. Pine timber is nearly extinct in America east of the Missouri river. The one defect in this tree is that it breaks with sleet in some climates—notably in Kentucky, yet even there it is worth while.

Cottonwood is only too well known. It pays, for all that. Trim the trunks, make them into saw log shape; the lumber is useful if put where it will be kept dry. It makes admirable wagon boxes, loft floors for hay mows, box boards, and many other things. It outgrows all other American trees. White willow comes next to cottonwood in growth. It makes good fuel. If trimmed it makes saw logs that work under the plane almost like white pine.

European larch is a rapid growing tree that makes good fence posts and saw stuffs, likes dry soils and grows to usable size in 30 years.

Red elm, or slippery elm, is a neglected tree of great value. When grown in the open it is straggly. When grown under forest conditions it grows straight and beautiful. Is a rapid grower. The wood is very valuable for wagon making, interior finishing, and a hundred purposes.

This seems a small list, but there are trees that may be added for certain soils. Yellow or black locust is sometimes safe, but usually eaten by borers. Black walnut is valuable in rich soil; elsewhere, it is of slow growth.

Osage orange is slow to start, rapid in growth afterward; it makes imperishable posts and the best buggy spokes known.

Grouping Farm Buildings

The building of barns will of course depend much on the character of farming followed. I do not favor the building of large combined barns and stables to house all the animals of many classes, the tools and machines, the forage and grain, under one roof. Instead, I advise a stable for the horses, another apart from it for the dairy, if one is kept, though if only two or three cows are kept they can be sheltered in the horse stable or in a leanto at one side or end. As a rule, horses and cows should be separated. Horses are better off for abundant air and in cool or almost cold stabling. Cows giving milk also need abundant air, but will not endure cold well or as low temperatures as make horses thrive. To get best results make these stables apart. An open yard, if possible, paved with concrete made rough, should be provided for both cows and horses. Naturally, one cannot well have both classes of animals in the same yard.

Sheep require a shed by themselves. Sheep are better to have a very great flood of fresh air. They do not mind the cold at all. By all means give the sheep their own quarters. They need a yard, also. Better have it on the north side of the barn. There will be less mud there; the ground will remain frozen in winter. There will be shade there in summer.

Pigs are best off in a place by themselves. A permanent pigging house is good to have. Concrete the small yards in front of each pen.

Poultry need separate quarters. One does not wish fowls in the stable or on the hay. The carriage shed is a poor place for hens.

Then there is the tool shed. Make it at a very convenient point, so that it is easy to drive through it and unhitch right there from the wagon, drill, mower, or corn planter. The simpler the tool shed is, the better, probably. A simple shed open at two sides, with posts 10 feet apart, the shed about 30 feet wide and as long as you need, is satisfactory. Have an upper story or half story with a bridge that can be let down. There you can place tools that will not be needed for months to come. The beauty of such a shed is that one can drive right through it crossways and leave any machine or wagon in place.

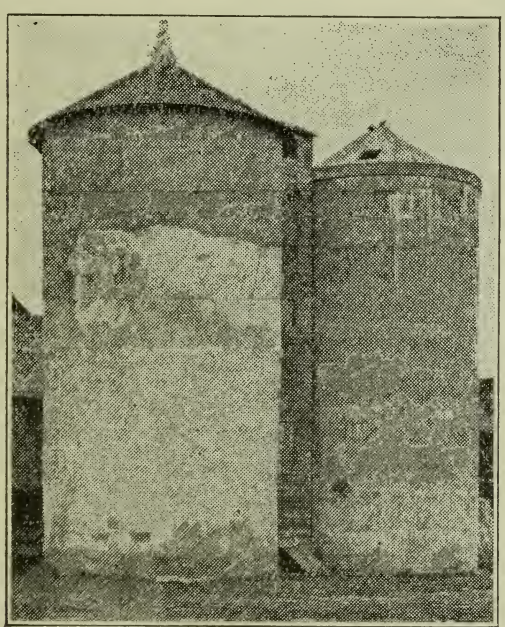
Now about grouping these buildings. It is not a simple thing to plan. Nor can one plan for any farm until he has seen it. A safe rule is to place buildings far enough apart so that should there come a fire, all will not be be devoured.

Roofs of slate, tile, or metal will lessen the danger from fire. There is little economy in having buildings crowded together. Naturally, the horse stable deserves a central and convenient place; the carriage house may abut the lawn. It should not be attached to the stable. If it is, there should be a close partition dividing it from the stables, else the odors of ammonia will fill the carriage robes. If a dairy is kept, the milk should not be very far from the dairy room. Overhead trolleys will convey this milk from the stable to the dairy building; such an arrangement is used by enterprising dairymen. The sheep may as well be farther back. The pig pens should not be where prevailing winds will carry their odor to the dwellings. Even clean pig pens have an odor. The poultry house will be well located in the orchard, convenient of access for the housewife, who naturally will be much interested in it.

Concrete on the Farm

Any one can make good concrete. It needs care. Use only the best Portland cements; they are all cheap now. Get the right proportion of cement to your gravel or broken stone. Most farmers can find gravel naturally intermixed with sand. Such stuff makes good concrete when the right amounts of cement and water are added and it is mixed well. One must add cement enough to fill all air spaces between the grains of sand and thus make the concrete dense. With gravel and sand mixed by nature a proportion of 1 part cement to 5 of gravel, by measure, is good for most work. For surfacing or work requiring extra strength it may be made stronger by adding a little more cement.

Make a measuring box, with no bottom, that will hold exactly one-half cubic yard. If it is made of 12-inch boards, it may be 40½ inches wide and 48 inches long, inside measurement. This holds just one-half a cubic yard. Lay this down on a board platform, or on the hard, smooth earth. Throw in a few inches of gravel, then empty a sack of cement, spreading it around evenly, then heap in more gravel, then another sack of cement. Fill it a little less than level full for a one-fifth mixture. Lift off the box and set to one side. Shovel it from this pile to a new place at one side Take each shovelful exactly from the bottom of the pile and lay it exactly on the top of the new pile. Be careful about this, for on it depends the thoroughness of your mixture Make the new pile as tall and cone-shaped as possible, and take each shovelful exactly from the bottom of the first pile. Then move the stuff again back where it lay, using the same exact care. One will see the reason for this method as he does the work; every shovelful laid on the peak of this cone-shaped pile rolls down on each side and distributes the particles. Shovel it three times. Then wet it down by sprinkling on one side with a large sprinkling can. Don't wash the cement off the pebbles; hoe the moistened stuff down as fast as it is wet. Make it quite wet, but never sloppy—as wet as you can make it and have all the water well soaked in—no water on top of it. Then hurry it into the forms. Don't let it set while you go to dinner; it won't be so good. As you put it in the forms churn it with a board or stick; agitate it to get all the air-bubbles out. Keep it moist. It takes 10 days for concrete to get hard, and, it ought, if possible, to be wet down daily for 30 days. It is about as strong as ever it will be in 45 days. Cover concrete fence posts with moist earth or sawdust or sand so they can't dry out until they are seasoned. Be sure they are well reinforced with steel, well placed. No "expert" is needed to do concrete work on the farm, only good common sense and a handy man to build forms.



Concrete Silos on an Illinos Farm

Information for Builders

Wood and Lumber

A cord of wood contains 128 cubic feet. To ascertain how many cords there are in a pile of wood, multiply the length by the height, and that by the width, and divide the product by 128.

To ascertain the circumference of a tree required to hew a stick of timber of any given number of inches square, divide the given side of the square by 0.225, and the quotient is the circumference required.

Round timber, when squared, loses one-fifth.

To measure round timber, take the girth in inches at both large and small ends, add them, divide by 2, which gives the mean girth; then multiply the length in feet by the square of one-fourth of the mean girth and the product will be the contents in cubic feet. This rule is commonly adopted, and gives four-fifths of the true contents, one-fifth being allowed to the purchaser for waste in sawing.

To measure inch boards, multiply the length in feet by the width in inches, and divide the product by 12. The quotient will be the contents in feet. For lumber 1¼ inches thick, add ¼ to the quotient. If 1½ inches thick, add ½. If 1¾ inches thick, add ¾. If 2 inches thick, divide by 6 instead of by 12. If 2¼ inches thick, add ¼ to the quotient and so on. If 3 inches thick, divide by 4. If 4 inches thick, divide by 3. If 6 inches thick, divide by 2.

Covering Capacity of Shingles

Average size of shingles—4 x 16 inches—is taken as a basis of calculation.

100 sq. ft. will require, laid 4 inches to the weather..... 900

100 sq. ft. will require, laid 4½ inches to the weather..... 800

100 sq. ft. will require, laid 5 inches to the weather..... 720

Three and one-half pounds of four-penny nails are required for laying 1,000 shingles.

5 to 10 per cent should be added to these figures for waste and shortage.

Stone and Brick Walls

A perch of stone is 24.75 cubic feet. When built in the wall, 2¾ cubic feet are allowed for the mortar and filling; hence, 22 cubic feet of stone make one perch of wall.

Masons estimate 3 pecks of lime and 4 bushels of sand to a perch of wall.

To find the number of perches of stone in a wall, multiply together the length, height, and thickness in feet, and divide by 22.

Common bricks are 7¼ to 8 inches long by 4¼ inches wide and 2½ inches thick. Front bricks are ¼ inch longer and wider.

It requires 20 common bricks to lay one cubic foot. In an 8-inch wall 15 common bricks make one foot of wall.

One and one-eighth barrels of lime and ⅝ yard of sand will lay 1,000 common brick.

One mason and helpers (at the rate of 1¼ helpers to each mason) will lay in one day of ten hours, 1,800 to 2,000 common brick.

Stone foundation walls for elevators, etc., should not be less than 16 inches thick. A thinner wall does not bond together well. All foundation walls should be at least 8 inches thicker than that portion of the wall above grade.

Do not use more mortar than necessary, as it is obvious that stone is the stronger of the two materials. Do not lay the stone vertically, but on its natural quarry bed. Otherwise, water will easily penetrate between the layers. For all damp places, cement mortar, or, lime and cement mortar, should be used.

How and When to Spray

Plant	First Application	Second Application	Third Application	Fourth Application	Fifth Application
Apple — (Cankerworm, codling moth, bud moth, scab).	Spray before buds start, using copper sulphate solution.	After the blossoms have formed, but before they open, Bordeaux and Paris green.*	Within a week after blossoms have fallen, Bordeaux and Paris green.	10 to 14 days later, repeat.	10 to 14 days later, Bordeaux, or weak copper sulphate.
Bean — (Anthracnose).	When blossoms appear, spray with Bordeaux.	10 days later, repeat.	10 to 14 days later, weak copper sulphate solution.	Repeat last if necessary.	
Cabbage — (Worms, aphis).	When worms first appear, kerosene emulsion, or Paris green.	If worms or aphides are present, repeat if plants are not heading, using emulsion for aphis.	If aphides persist, or if worms reappear, use kerosene emulsion if plants are not heading.	After heads form, use saltpeter for worms, a teaspoonful to a gallon of water; emulsion for aphides.	Repeat, if necessary.
Carnation — (Rust and other fungous diseases).	When planted out, dip in Bordeaux.	7 to 12 days later, spray plants with Bordeaux.	Repeat at intervals of a week or ten days until blossoms open.	While in bloom, spray every week with the dilute copper sulphate solution.	
Cherry — (Rot, aphis, curculio, and slug).	Before buds start, use copper sulphate solution. For aphis, kerosene emulsion.	When fruit has set, Bordeaux and Paris green.*	10 to 12 days later, if signs of rot appear, repeat.	10 to 12 days later, copper sulphate solution, weak.	Repeat, if necessary.
Currant — (Worms, mildew).	As soon as worms are seen, Paris green.	If they reappear, repeat, adding Bordeaux for mildew.†	If worms still trouble, pyrethrum or hellebore.†		
Gooseberry — (Mildew, worms).	As leaves open, Bordeaux and Paris green.	In 10 to 14 days, repeat with both.	10 to 14 days later, sulphide of potassium on English varieties.	10 to 14 days later, repeat if necessary.	If mildew persists after crop is gathered, Bordeaux.
Grape — (Flea-beetle, fungous diseases).	Before buds burst, copper sulphate solution and Paris green.	When first leaves are half grown, Bordeaux and Paris green.	As soon as fruit has set, repeat.	10 to 14 days later, Bordeaux mixture, if disease is present.	If necessary, very weak copper sulphate solution.
Nursery Stock— (Fungous diseases).	When buds burst, Bordeaux.	Repeat at intervals of 10 to 14 days.	Repeat at intervals of 10 to 14 days.		
Peach, Apricot—(Leaf-curl, curculio, mildew, and rot).	Before buds swell, copper sulphate solution.	As soon as fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 12 days later, repeat.	If rot persists, use very weak copper sulphate solution every 5 to 7 days.†
Pear — (Leaf blight, scab, psylla, and codling moth).	Before buds start, copper sulphate solution.	Within a week after blossoms fall, Bordeaux and Paris green.	10 to 12 days later, repeat.	10 to 16 days later, Bordeaux.	10 to 16 days later, Bordeaux.†
Plum — (Black knot, rot, and all fungous diseases, curculio).	As buds start, copper sulphate solution. Cut out knot and burn.	When fruit has set, Bordeaux and Paris green.	10 to 12 days later, repeat.	10 to 20 days later, Bordeaux.	Weak copper sulphate solution, as is necessary.

How and When to Spray (Continued)

Plant	First Application	Second Application	Third Application	Fourth Application	Fifth Application
Potato—(Beetles, scab, blight).	For scab, soak seed in corrosive sublimate solution (2 oz. in 16 gallons of water) for 90 minutes.	When beetles or their larvæ appear, Paris green (1 pound to 100 pounds of plaster).	Repeat whenever necessary.	When blight of the leaves is accompanied by rot of the tubers, Bordeaux.	Repeat, if necessary.
Quince — (Leaf and fruit spot, rot).	Before buds start, copper sulphate solution.	When fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 20 days later, Bordeaux.	Bordeaux or copper sulphate solution, as necessary.
Raspberry, Blackberry—(Anthracnose, rust).	Cut out badly diseased canes. Spray with copper sulphate solution before growth starts.	When new canes are one foot high, spray with Bordeaux mixture.	10 to 14 days later, weak copper sulphate solution.	When crop is gathered, remove old canes, thin new ones, and spray with Bordeaux mixture.	**Special Notes** For Black Knot on cherries and plums, cut out and destroy by burning the diseased parts as soon as discovered. For Aphis on all plants use kerosene emulsion. If Red Rust appears, the entire stools affected should be cut out and burned. Young plants should be sprayed with Bordeaux mixture at the time of the first and third applications to bearing plants.
Rose—(Mildew, black spot, red spider, aphis).	Mildew: Keep heating pipes painted with equal parts lime and sulphur mixed with water to a paste.	Black spot: Spray plants once a week with weak copper sulphate.	Red Spider: Kerosene emulsion to under side of foliage.	Aphis: Kerosene emulsion.	
Strawberry—(Rust).	Just before blossoms open, Bordeaux and Paris green.	When fruit has set, Bordeaux* or weak copper sulphate solution.	As soon as berries are harvested, Bordeaux (if plants are to be kept longer).		
Tomato — (Rot and blight, worms).	When first fruits have set, Bordeaux.	If disease appears, repeat* or use weak copper sulphate solution.	If necessary, spray with weak copper sulphate solution.		
Violet — (Blight, red spider).	When blight is first seen, weak copper sulphate. Kerosene emulsion for insects.	Repeat at intervals of 10 to 20 days, as necessary for blight.	Note.—Use kerosene emulsion, very weak.		

Explanation.—Whenever an asterisk (*) is used it cautions against spraying with poisons while the plants are in blossom; a dagger (†) indicates that there is danger in making an application within three weeks of the time the fruit is to be used as food. While the number of applications recommended will be found desirable, in seasons when the fungi are less troublesome a smaller number may often suffice.

FUNGICIDES

Copper Sulphate Solution

Copper sulphate.....1 lb. Water.....25 gal.

For use only before the buds open. It is ready for use as soon as dissolved in water.

Bordeaux Mixture

Copper sulphate.....4 lbs. Quicklime.....4 lbs.
Paris green (for leaf-eating insects).....4 oz. Water (1 barrel).....40-50 gal.

To prevent potato rot, 6 lbs. of copper sulphate is used instead of 4.

Ammoniacal Copper Carbonate

Copper carbonate.....5 oz. Ammonia.....2 qts.
Water (1 barrel).....40-50 gals.

For use late in the season when Bordeaux mixture may stain the fruit. It is also best adapted for greenhouse spraying.

INSECTICIDES

Kerosene Emulsion

Kerosene (coal oil).....2 gals. Rain water.....1 gal.
Soap.....½ lb.

To be diluted before use with 9 parts of water. For sucking insects.

Paris Green and Water

Paris green.....1 lb. Lime (fresh).....1 lb.
Water.....200 gals. For Insects which eat foliage.

The Disk Harrow, Its Use and Abuse

By H. W. Campbell, Supt. Campbell Soil Culture Co.

There is no agricultural implement more important to the western farmer than the disk harrow. But, like other farm implements, from its first conception it has undergone changes; some have been improvements, others have been a disadvantage. The principal reason that all changes have not been improvements is that from its first conception to the present time its use has been more or less misunderstood. Thousands of acres of wheat have been put in by the use of the disk harrow alone that have not turned the farmer any profit, and many times have occasioned a loss of not only his labor, but seed. The great value of the disk harrow lies in its adaptability to the protection of moisture, the destruction of weeds, the preparation of the surface soil for the encouragement of rapid percolation of the rainwater, and for thoroughly pulverizing a somewhat cloddy plowed field and obtaining an improved physical or mechanical condition of the soil. It has been used on thousands of acres instead of the plow when it should have been used to precede the plow. We have noted instances where the early spring use of the disk for the sole purpose of preventing evaporation and preparing the surface to receive and utilize further rains have resulted in giving the farmers increased yields of corn, as high as twenty bushels to the acre. Think of twenty bushels of corn per acre for only fifty cents of extra expense!

In the handling of fields for summer culture there is no tool that can take the place of the disk harrow, cost of labor and value of work considered. Bear in mind this fact, that the great value of summer culture is not alone in the storing and conserving of the rain water, but in obtaining a soil condition for the promotion of nitrification and other chemical action, for the development of the necessary elements to promote a vigorous, prolific growth of all plants. To promote nitrification, every possible effort must be put forth to prevent the loss of moisture from the firm soil beneath the mulch. In doing this, three detrimental conditions must be carefully watched and as far as possible prevented. First, the growth of weeds and all foreign vegetation; second, the getting of the soil mulch too fine by the sometimes necessary frequent cultivation of the soil; third, to keep the mulch light and loose. No tool ever in use on our fields has accomplished the above as effectually as the disk harrow with the small diameter of disk.

For orchard work it is not a tool that can be continuously used, yet we do not see how a man can successfully handle the soil among the trees without it. Here, too, the above conditions must be vigorously watched. The less the rainfall, the greater the care which should be exercised. The disk harrow may be used to prepare autumn plowed land for a crop in the spring, because of the complete pulverizing and thorough separating of the soil into small clods in its rotating action, and when the proper diameter of disk is used, the work is perfect. Here, the small disk is by far the most effective, as the larger disk cuts too deeply.

We most urgently advise the use of the disk early in the spring on all stubble ground that may have been left over the winter without plowing. No time should be lost after the soil has become sufficiently thawed and dry so that it will not stick to the disk. This is especially true where corn is to be put in with a lister. For best results, double disk the ground by lapping one-half, the object being to thoroughly pulverize and loosen the surface, for reasons above referred to, as well as to break the hard, crusted surface to promote a more rapid and complete soaking into the soil below of the early spring rains. For this work the diameter of the disk is not so vital.

In still another season of the year we find the disk harrow of great value, and that is immediately after the small grain or any other crop is removed.

The Disk Harrow, Its Use and Abuse (Continued)

It is advisable whenever possible to follow behind the harvester and not allow the packed, crusted soil to be exposed to the sun's rays a single day after the crop is gathered. It is very difficult to explain the value and importance of this work in sufficiently strong terms to permit the reader to grasp its full force and meaning. We will endeavor, however, to give three reasons:

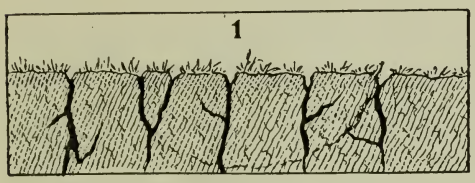
First, there is no time in the year when water, held in the soil near the surface in sufficient quantities, will bring about so many valuable chemical changes as during the months of July and August, and these changes mean additional bushels to the next crop. But they will not take place if the per cent of moisture is too low or there is a crust over the surface or under the mulch. The surface must be loose and the soil must carry the necessary quantity of both air and water. The better the farmer understands these facts, the greater will his yield per acre continue from year to year.

Second, if there is any moisture in the soil at harvest time, though it be a few inches down below, by preparing a mulch of liberal thickness this moisture will accumulate by capillary attraction, which nature has provided under these conditions shall be largely upward as far as the soil is firm, stopping beneath the mulch or loosened soil. If no rains come, your ground in a few days is in perfect condition to plow because of this increased moisture. If you wish to list your corn and not plow in the fall, this moisture can be carried over until the next spring; then by early disking, and in case of a dry spring your field can be planted and the seed will immediately germinate and grow, while your neighbor who has not taken advantage of these scientific principles is worrying about a dry country, and immediately becomes pessimistic on all questions. Luck was against him; everybody and everything was against him—but really the only thing against him was his lack of knowledge regarding the merits of the disk harrow and the true principles of scientific soil culture.

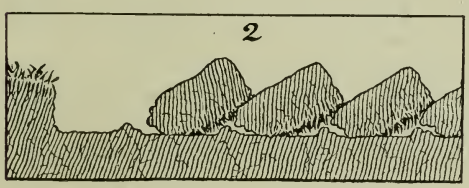
Third, in case you wish to sow fall wheat, this disking behind the harvester may mean ten to twenty bushels more per acre in your crop next year. By holding the moisture as shown above, it will be seen that any subsequent rain will percolate more quickly and deeper. If the rain be a heavy one, sufficient to dissolve and pack the loosened surface, the common spike tooth harrow should be used as soon as the soil is dry enough not to stick. If the soil is made quite firm, then the disk harrow should be used again, unless you are able to finish your plowing soon, in which case the second disking would not be advisable, as the common harrow would loosen the ground enough to hold the moisture for a short time.

In closing this very brief article on the disk harrow we must call the farmer's attention to a few vital facts. First of all is the recognized fact that a short crop from any cause makes business dull, money immediately seeks a safe hiding place, and just in proportion to the extent of the crop shortage does the price of the dollar go up and the price of general commodities go down. Go back to 1890 to 1895 for evidence. "But," some one says, "they were dry years." Yes, and had all the farmers then living west of the Mississippi river been thoroughly familiar with the correct principles of soil culture or scientific tillage, and fully appreciated the merits of the disk harrow and made the intelligent use of it that they will a few years hence should the same drouthy conditions above referred to again exist, there would not have been such short crops, nor would the pioneers of the Dakotas, Nebraska, and Kansas have left the country destitute as they were at that time and slowly made their way back east to advise their friends that their mortgages were worthless.

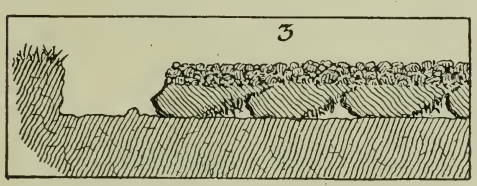
How to Make a Good Seed Bed



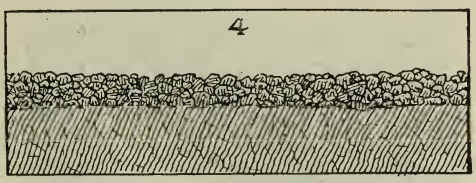
View No. 1 represents hard, cracked-open soil that has not been tilled, showing how clod formation takes place and the depth from which moisture can escape from the ground.



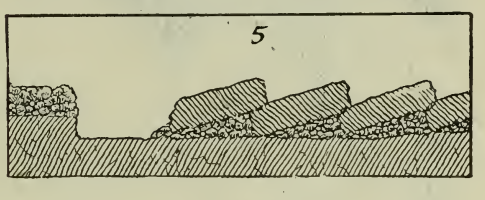
View No. 2 represents plowed ground, showing air space between the turned over slice and the ground beneath. This air space prevents a firm and compact seed bed from being made and stops capillary attraction with the subsoil.



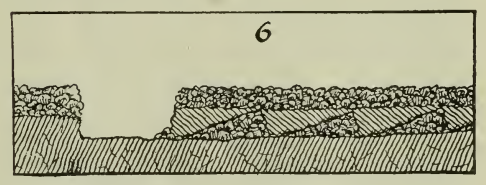
View No. 3 is plowed ground disked. Note that the air spaces still exist. This is what happens when cornstalk ground is plowed without first being disked. Cornstalk roots and other trash prevent the ground from becoming compact and firm.



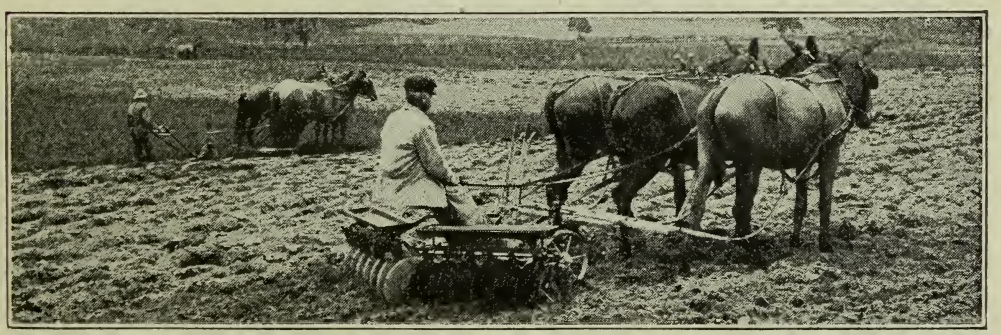
View No. 4 is ground disked before it is plowed. The mulch of dirt breaks up capillary attraction so that moisture cannot escape from the top of the ground. This permits the moisture to come close to the surface for the use of the plant roots.



View No. 5 is the disked surface shown in Fig. 4 plowed. Disking the ground before it is plowed leaves a mulch of fine dirt which fills up the air spaces left between the furrowed slice and the ground beneath, thus making the foundation for a firm and compact seed bed.



View No. 6 illustrates ground disked before and after plowing. When the ground is treated in this way the seed bed becomes compact and firm in a much shorter time and forms a means of capillary attraction. This treatment puts the ground in such condition that whether the season be wet, dry, or normal, the farmer is not taking any chances.



This is the Way to Make a Good Seed Bed

Make This Little Experiment at Your Supper Table Tonight

Take a lump of sugar, on it put a layer of powdered sugar an eighth or a quarter of an inch thick. Then hold the lump so that the bottom of it touches the tea or coffee for an instant. Note how quickly the tea or coffee rises to the top of the lump sugar. It reaches the top in an instant, but there it seems to stop. The powdered sugar does not take it up the way the coarse lump sugar did. If you let it stand, you will find that it takes some time for the tea or coffee to soak through the powdered sugar.

The whole secret of conservation of moisture in the soil is demonstrated by this little experiment. If you disk and harrow the soil so that there is a fine mulch covering, this powdered soil, or mulch, will act just like the powdered sugar. Soil ordinarily is compact and contains many passageways through which the water quickly rises to the surface. The water will evaporate unless you have the fine mulch of soil to prevent it.

Any farmer can conserve the moisture in the soil so that his growing crop will be well provided for, even in dry seasons. Disk the ground and harrow it, preferably with I H C tillage implements, because we believe—in fact, we know—these to be the best. This will give you the fine mulch which will keep the moisture in the soil for the growing crop and will not permit it to evaporate. Your experiment with the lump and powdered sugar proves this.

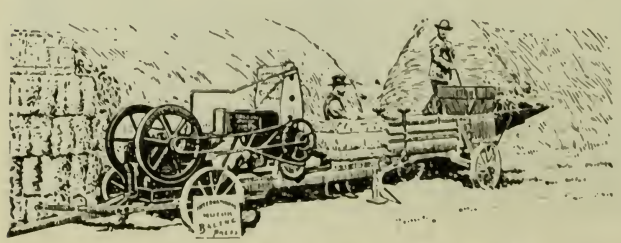
The I H C line of tillage implements includes disk harrows, spring tooth harrows, vineyard harrows, combination harrows, peg tooth harrows, and cultivators. These are made in various styles and sizes, so that no matter in what section you farm, we can give you the implement designed for your special needs.

I H C Hay Presses

I H C hay presses can be operated with a minimum amount of power. On the motor presses this is due to the toggle joint plunger construction, On the pull-power horse presses it is due to the combined action of the toggle joint plunger and a compound lever arrangement.

Made in styles and sizes to meet your requirements.

I H C motor presses are made in three sizes; 14x18-in. bale chamber, with 3-H. P. I H C gasoline engine; 16x18-in. bale chamber, with 4-H. P. I H C gasoline engine; 17x32-in. bale chamber, with 6-H. P. I H C gasoline engine.



An I H C Motor Press in the Field

Two-horse presses are made with three sizes of bale chamber — 14 x 18, 16x18, and 17x22-in. One-horse presses are made with 14x18-in. bale chamber.

Hints for Housewives

Up-to-Date Methods in Canning

The old way of making jelly was a pint to a pound, cooked for 20 minutes at a time, with laborious skimming. The same old-time method of preserving and canning meant peeling apples and peaches by hand, pitting cherries with the thumb and first finger unmindful of time and stain. There is a better way than the old-time way which so many housekeepers dreaded.

To make delicious currant jelly, heat the currants very hot with a little water to keep them from burning. Press through a colander, then through a vegetable press. Put as many pints of juice in your kettle as the kettle will hold. Boil steadily for 20 minutes, skimming when necessary. Allow one pound of sugar to each pint of juice. Put the sugar in iron pans on top of brown paper in a hot oven until piping hot. If it seems to burn, put paper on top. Keep the door of the oven closed. The sugar must be so hot that it does not stop the boiling of the juice when it is added at the end of 20 minutes. Let the sirup froth up just once after dissolving.

In jarring or preserving fruit, the flavor is best preserved by boiling water around the jars of fruit rather than boiling the fruit itself. Here is an excellent method of cooking fruit in jars. You need a good size wash boiler to hold eight quart jars and eight tin holders. If you cannot buy these tin holders your tinner will make them. If you have no holders, put clean shingles in the bottom of the boiler on which to stand the jars. Select the fruit carefully, and pick it over to see that there are no spotted bits included. It should be prepared as for ordinary canning, but instead of being put in a kettle, put directly into a quart jar. Shake down once or twice to pack it solidly as the fruit shrinks considerable after boiling. The table below gives the required amount of sugar. Have plenty of boiling water on the stove. Put the sugar in a small pitcher or pint measure and cover with boiling water. Do not use too much water at first. Pour the sirup over the fruit and add enough water to fill the jars. Put on the rubber and screw the covers loosely. Put each jar in a stand and set the eight at once in a wash boiler filled to within an inch of the covers of the jars with lukewarm water. After the water comes to the boiling point, cook the length of time required as shown by the table. Remove from the fire and unscrew covers for a few minutes to allow the steam to escape Rescrew tightly and turn each jar upside down on the table to see that they are entirely air-tight.

In canning tomatoes, no water is used, merely a teaspoonful of salt to each jar. Pick the tomatoes early in the season when they are not watery. Boiling water should be poured over them to make them skin easily. Fill jars very full. Wrap each jar in newspaper and keep in a dark, cool place.

Table for Boiling Fruit

Fruits	Time for Boiling	Amount of Sugar to Quart	Fruits	Time for Boiling	Amount of Sugar to Quart
Cherries (sweet)	5 minutes	6 ounces	Peaches (halved or whole)	8 minutes	8 ounces
Cherries (sour)	5 minutes	8 ounces	Pineapple (sliced)	15 minutes	10 ounces
Raspberries	6 minutes	6 ounces	Crab apple	25 minutes	8 ounces
Blackberries	8 minutes	8 ounces	Sour apples (quartered)	10 minutes	8 ounces
Strawberries	8 minutes	8 ounces	Currants	6 minutes	10 ounces
Plums	10 minutes	8 ounces	Wild grapes	10 minutes	8 ounces
Green gages	10 minutes	8 ounces	Gooseberries	8 minutes	8 ounces
Huckleberries	5 minutes	4 ounces	Quinces (sliced)	35 minutes	10 ounces
Pieplant (sliced)	10 minutes	10 ounces	Tomatoes	45 minutes	Teaspoonful of salt.
Small sour pears (whole)	30 minutes	8 ounces			
Bartlett pears (halved)	20 minutes	6 ounces			

COOKING TIME TABLE

For Baking Meats	Time in oven
Mutton, leg, per pound	10 to 15 min.
Beef ribs, per pound	8 to 15 min.
Round of beef, per lb	12 to 15 min.
Lamb, well done, per lb	15 min.
Pork, well done, per lb	20 min.
Veal, well done, per lb	18 to 20 min.
Mutton, shoulder, stuffed, per pound	15 min.
Venison, rare, per lb	10 min.
Goose, per pound	18 min.
Chicken, per pound	15 min.
Turkey	1¾ to 3 hours
Birds, small (hot oven)	15 to 20 min.
Ducks, wild (very hot oven)	15 min.
Ducks, tame	45 min.
Partridge	35 to 40 min.
Bread	1 hr.
Custard (very slow oven)	1 hr.
Biscuits	20 min.
Cakes	20 to 45 min.
Fish	
Shad	15 to 25 min.
Trout	15 to 25 min.
Bluefish	15 to 25 min.
Small fish	5 to 10 min.
For Broiling Meats	
Mutton chops	8 to 10 min.
Grouse	15 min.
Quail	8 to 10 min.
Steak, 1½ inches thick	10 to 15 min.
Steak, 1 inch thick	8 to 10 min.
Spring chicken	20 min.
Squab	10 to 15 min.

For Boiling Meats	Time
Mutton, per pound	15 min.
Ham, per pound	20 min.
Chicken, per pound	15 min.
Turkey, per pound	15 min.
Corned beef, per pound	30 min.
Fowl, per pound	20 to 30 min.
Tripe, per pound	3 to 5 hrs.
Fish	
Halibut, per pound	15 min.
Bluefish, per pound	10 min.
Bass, per pound	10 min.
Codfish, per pound	6 min.
Haddock, per pound	6 min.
Salmon, per pound	10 to 15 min.
Small fish, per pound	6 min.
Lobster	30 to 40 min.
Vegetables	
Peas	15 to 20 min.
Spinach	15 to 20 min.
Lima beans	30 to 40 min.
String beans	20 to 30 min.
Potatoes	20 to 30 min.
Asparagus	20 to 25 min.
Brussels sprouts	10 to 15 min.
Green corn	20 to 25 min.
Onions	30 to 40 min.
Parsnips	30 to 40 min.
Rice	15 to 20 min.
Turnips	30 min.
Beets	30 min. or more
Cauliflower	20 min.
Cabbage	20 min.
Macaroni	20 min.

A Table of Weights and Household Measures

Every housekeeper knows the old saying—

A pint's a pound
The world around.

This is not literally true and we append some comparative weights and measures for various articles.

1 teaspoon liquid equal 4 saltspoons.

1 tablespoon liquid equal 4 teaspoons.

1 tablespoon dry material equals 3 teaspoons.

1 wineglass liquid equals 4 tablespoons, or ½ gill, or ¼ cup.

1 cup equals ½ pint, or 2 gills, or 16 tablespoons liquid, or 12 tablespoons dry material, or 8 heaping tablespoons dry material.

1 quart liquid equals 4 cups.

1 quart flour equals 1 pound, or 4 cups.

1 pint milk or water equals 1 pound.

1 pint chopped meat packed solidly equals 1 pound.

1 pound solid butter equals 2 cups.

1 pound of granulated sugar equals 2 cups.

1 pound powdered sugar equals 2½ cups.

1 pound meal equals 3 cups.

1 pound eggs is (about) 9 large or 10 medium-sized eggs.

Some Standard Works on Agriculture

List Compiled by the I H C Service Bureau

The I H C Service Bureau has received so many requests from farmers and those interested in agriculture for information relating to standard books on agriculture, the price, and where they can be purchased, that the Bureau has compiled the list printed below. This does not by any means include all of the good books on agriculture. Those listed, however, can be considered reliable. These books are usually carried in stock by leading booksellers. If you have difficulty in obtaining any of them, write the I H C Service Bureau. It will tell you just where the book can be purchased.

Name	Price
A B C of Corn Culture, by P. G. Holden	$ .25
Alfalfa in America, by Jos. E. Wing	2.00
Animal Breeding, by Shaw	1.50
Book of Alfalfa, by Coburn	1.60
Book on Corn, by Bowman & Crossley	2.50
Book on Dairying, by McKay & Larson	1.50
Cereals in America, by Hunt	1.75
Clovers, by Shaw	1.00
Clover Farming, by Henry Wallace	.25
Cyclopedia of Agriculture, by Bailey	20.00
Elements of Agriculture, by Warren	1.10
Farm Buildings	2.00
Farm Dairying, by Laura Rose	1.25
Farm Grasses in the United States, by Spellman	1.00
Farm Machinery, by Davidson & Chase	2.00
Farmer's Business Hand Book, by Roberts	1.25
Farmstead, by Roberts	1.50
Feeds and Feeding (new edition), by W. A. Henry	2.25
Fertility of the Land, by Roberts	1.50
Fertilizers, by Voorhees	1.50
First Principles of Soil Fertility, by Vivian	1.00
Forage and Fibre Crops, by Hunt	1.75
Fungus Diseases of Plants, by Duggar	2.40
Garden Making, by Bailey	1.50
Grasses of North America (2 vols.), by Beal	7.50
Horse Book, The, by Johnson	2.00
Horse, The, by Roberts	1.25
How to Choose Your Farm, by Hunt	1.75
Live Stock Judging, by Craig	1.50
Milk and Its Products, by Wing	1.50
Modern Methods of Testing Milk and Its Products, by Van Slyke	.75
Our Insect Friends and Foes, by Craigins	1.75
Physics of Agriculture, by King	1.75
Potato, by Frase	.75
Practical Dairy Bacteriology, by Conn	1.25
Principles of Agriculture, by Bailey	1.50
Profitable Stock Feeding, by H. R. Smith	1.50
Profitable Stock Raising, by Shamel	1.50
Sheep Farming in America, by Wing	1.00
Soils, by Fletcher	2.00
Soil Culture Manual, by Campbell	2.50
Soil Fertility and Permanent Agriculture, by C. G. Hopkins	2.70
Spraying of Plants, by Bademan	1.25
Successful Corn Culture, by P. G. Holden	.25

Books on Agriculture (Continued)

Name	Price
Testing Milk and Its Products, by Farrington & Woll	1.25
The Amateur's Practical Garden Book, by Bailey	1.00
Types and Breeds of Farm Animals, by Plum	2.40
Uncle Henry to a Farm Boy, Henry Wallace	.25
United States Year Book	....
Vegetable Garden, by Prof. Samuel B. Green	1.00

Books on Domestic Science

Name	Price
Care and Feeding of Children, by L. E. Holt, M. D	$ .75
Chemistry in Daily Life, by Lessar-Cohn	1.75
Chemistry of Cookery, by W. Mattieu Williams	1.50
Chemistry of Cooking and Cleaning, by Richards and Elliott	1.00
Cost of Cleanness, by Richards	1.00
Cook Book for Nurses, by Sarah C. Hill	.75
Diet in Relation to Age and Activity, by Sir Henry Thompson	1.00
Dust and its Dangers, by Pruddens	.75
Elements of the Theory and Practice of Cookery, by William Fisher	1.00
Food and Its Functions, by James Knight	1.00
Food Materials and Their Adulterations, by Richards	1.00
Food Products of the World, by Mary E. Green, M. D	1.50
Home Economics, by Maria Parloa	1.50
Home Nursing, by Harrison	1.00
Home Sanitation, by Richards and Talbot	.25
Household Economics, by Helen Campbell	1.50
How to Feed Children, by Louise E. Hogan	1.00
Laundry Manual, by Balderston and Limerick	.50
Principles of Home Decoration, by Candace Wheeler	1.80
Rural Hygiene, by Ogden	1.50
The House, by Isabel Bevier	1.50
The Healthful Farm Home, by Helen Dodd	.60
Boston Cooking-School Cook Book, by Fannie M. Farmer	2.00
The Baby—A book for Mothers and Nurses, by D. R. Brown, M. D	1.00

Books on Fruit Growing

Name	Price
Amateur Fruit Growing, by Prot. Samuel B. Green	$ .50
American Apple Orchard, by Waugh	1.00
American Horticulturist Manual (Vol. 1), by Bud and Hanson	1.30
Book of Plants and General Horticulture, by Henderson	3.00
Bush Fruits, by Card	1.50
Cyclopedia of Horticulture (4 vols.), by Bailey	20.00
Forcing Book, by Bailey	1.25
Horticulturists' Rule Book, by Bailey	.75
Nursery, by Bailey	1.50
Principles of Fruit Growing, by Bailey	1.50
Pruning Book, by Bailey	1.50
Spraying Crops, by Weed	.50
The Fruit Growers' Guide, by E. H. Favor	1.00

Simple Interest Table

NOTE—To find the amount of interest at 2½ per cent on any given sum, divide the amount given for the same sum in the table at 5 per cent by 2; at 3½ per cent divide the amount at 7 per cent by 2, etc.

Amt.	Time / Interest	1 day	2 days	3 days	4 days	5 days	6 days	7 days	8 days	9 days	10 days	20 days	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	1 year
	3	..	..	..	..	..	..	..	..	..	..	..	..	....	....	....	....	1	3
	4	..	..	..	..	..	..	..	..	..	..	..	..	....	1	1	1	2	4
$1	5	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	2	3	5
	6	..	..	..	..	..	..	..	..	..	..	..	1	1	1	2	2	3	6
	7	..	..	..	..	..	..	..	..	..	..	..	1	1	1	2	3	4	7
	3	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	2	3	6
	4	..	..	..	..	..	..	..	..	..	..	1	1	1	2	2	3	4	8
$2	5	..	..	..	..	..	..	..	..	..	..	1	1	2	3	3	4	5	10
	6	..	..	..	..	..	..	..	..	..	..	1	1	2	3	4	5	6	12
	7	..	..	..	..	..	..	..	..	..	..	1	1	2	4	5	6	7	14
	3	..	..	..	..	..	..	..	..	..	..	..	1	1	2	3	4	5	9
	4	..	..	..	..	..	..	..	..	..	..	1	1	2	3	4	5	6	12
$3	5	..	..	..	..	..	..	..	..	..	..	1	1	3	4	5	6	8	15
	6	..	..	..	..	..	..	..	..	..	1	1	2	3	5	6	8	9	18
	7	..	..	..	..	..	..	..	..	1	1	1	2	4	5	7	9	11	21
	3	..	..	..	..	..	..	..	..	..	..	..	1	2	3	4	5	6	12
	4	..	..	..	..	..	..	..	..	..	..	1	1	2	4	5	6	8	16
$4	5	..	..	..	..	..	..	..	..	1	1	1	2	3	5	7	8	10	20
	6	..	..	..	..	..	..	..	1	1	1	1	2	4	6	8	10	12	24
	7	..	..	..	..	..	..	1	1	1	1	2	2	5	7	9	12	14	28
	3	..	..	..	..	..	..	..	..	..	..	..	1	1	2	4	5	7	8	15
	4	..	..	..	..	..	..	..	..	1	1	1	1	3	5	6	8	10	20
$5	5	..	..	..	..	..	..	1	1	1	1	1	2	4	6	8	10	13	25
	6	..	..	..	..	..	1	1	1	1	1	2	3	5	8	10	13	15	30
	7	..	..	..	..	..	1	1	1	1	1	2	3	6	9	12	15	18	35
	3	..	..	..	..	..	..	..	1	1	1	1	2	5	7	10	12	15	30
	4	..	..	..	..	..	1	1	1	1	1	2	3	6	10	13	16	20	40
$10	5	..	..	..	..	1	1	1	1	2	2	3	4	8	13	17	21	25	50
	6	..	..	1	1	1	1	1	2	2	2	3	5	10	15	20	25	30	60
	7	..	..	1	1	1	1	1	2	2	2	4	6	12	18	23	29	35	70
	3	..	..	..	..	..	..	1	1	1	2	4	6	12	19	25	31	38	75
	4	..	..	1	1	1	1	2	2	2	3	5	8	16	25	33	41	50	1.00
$25	5	..	1	1	2	2	2	3	3	3	7	10	21	31	42	52	63	1.25	
	6	..	1	1	2	2	3	3	3	4	8	13	25	38	50	63	75	1.50	
	7	..	1	1	2	2	3	3	4	4	5	10	15	29	44	58	73	88	1.75
	3	..	1	1	1	2	2	3	3	4	4	8	12	25	37	50	62	75	1.50
	4	..	1	1	2	3	3	4	4	5	6	11	16	33	50	67	83	1.00	2.00
$50	5	1	1	2	3	3	4	5	6	6	7	14	21	42	63	83	1.04	1.25	2.50
	6	1	2	3	3	4	5	6	7	8	8	17	25	50	75	1.00	1.25	1.50	3.00
	7	1	2	3	4	5	6	7	8	9	9	19	29	58	88	1.17	1.46	1.75	3.50
	3	1	1	2	3	4	5	6	6	7	8	16	25	50	75	1.00	1.25	1.50	3.00
	4	1	2	3	4	6	6	8	9	10	11	22	33	66	1.00	1.33	1.67	2.00	4.00
$100	5	1	3	4	6	7	8	10	11	13	14	28	42	83	1.25	1.37	2.08	2.50	5.00
	6	2	3	5	7	8	10	12	13	15	17	33	50	1.00	1.50	2.00	2.50	3.00	6.00
	7	2	4	6	8	10	12	14	16	18	19	39	58	1.17	1.75	2.33	2.92	3.50	7.00

Compound Interest on One Dollar

Years	Rate per cent 3	4	5	6	7
1	1.03	1.04	1.05	1.06	1.07
1½	1.04	1.06	1.07	1.09	1.10
2	1.06	1.08	1.10	1.12	1.14
2½	1.07	1.10	1.13	1.15	1.18
3	1.09	1.12	1.15	1.19	1.22
3½	1.10	1.14	1.18	1.22	1.27
4	1.12	1.17	1.21	1.26	1.31
4½	1.14	1.19	1.24	1.30	1.36
5	1.16	1.21	1.28	1.34	1.41
5½	1.17	1.24	1.31	1.38	1.45
6	1.19	1.26	1.34	1.42	1.51
6½	1.21	1.29	1.37	1.46	1.56
7	1.23	1.31	1.41	1.51	1.61
7½	1.24	1.34	1.44	1.55	1.67
8	1.26	1.37	1.48	1.60	1.73
8½	1.28	1.39	1.52	1.65	1.79

Years	Rate per cent 3	4	5	6	7
9	1.30	1.42	1.55	1.70	1.85
9½	1.32	1.45	1.59	1.75	1.92
10	1.34	1.48	1.63	1.80	1.98
100	19.25	50.50	131.50	340.00	868.00

WHEN MONEY DOUBLES AT INTEREST

Rate	Interest Simple Years	Comp'd Years	Rate	Interest Simple Years	Comp'd Years
1	100.00	69.66	4½	22.22	15.75
1½	66.66	46.56	5	20.00	14.21
2	50.00	35.00	5½	18.18	12.94
2½	40.00	28.07	6	16.67	11.90
3	33.33	23.45	6½	15.38	11.00
3½	28.57	20.15	7	14.29	10.24
4	25.00	17.67	7½	13.33	9.58

Interest and Statute of Limitations

State	Interest		Limitations			State	Interest		Limitations		
	Legal rate	By contract	Judgments	Notes	Accounts		Legal rate	By contract	Judgments	Notes	Accounts
	P. ct.	P. ct.	Yrs.	Yrs.	Yrs.		P. ct.	P. ct.	Yrs.	Yrs.	Yrs.
Alabama	8	8	20	*6	3	Montana	8	Any	10	8	3
Arkansas	6	10	10	5	3	Nebraska	7	10	5	5	4
Arizona	6	Any	5	4	3	Nevada	7	Any	6	6	4
California	7	Any	5	4	2	N. Hamp.	6	6	20	6	6
Colorado	8	Any	20	6	6	N. Jersey	6	6	20	6	6
Connecticut	6	6	†	‡	6	N. Mexico	6	12	7	6	4
Delaware	6	6	–	6	3	New York	6	6	20	6	6
Dist. of Col.	6	10	12	3	3	N. Carolina	6	6	10	*3	3
Florida	8	10	20	5	2	N. Dakota	7	12	10	6	6
Georgia	7	8	7	6	4	Ohio	6	8	5	15	6
Idaho	7	12	6	5	4	Oklahoma	7	12	1	5	3
Illinois	5	7	20	10	5	Oregon	6	10	10	6	6
Indian Ter.	6	10	....	....	....	Pennsylvania	6	6	5	6	6
Indiana	6	8	¶10	10	6	Rhode Island	6	Any	20	6	6
Iowa	6	8	20	10	5	S. Carolina	7	8	10	6	6
Kansas	6	10	5	5	3	S. Dakota	7	12	10	6	6
Kentucky	6	6	15	15	*5	Tennessee	6	6	10	6	6
Louisiana	5	8	10	5	3	Texas	6	10	10	4	2
Maine	6	Any	20	††6	6	Utah	8	Any	8	6	4
Maryland	6	6	12	3	3	Vermont	6	6	8	‡‡6	6
Mass.	6	Any	20	6	6	Virginia	6	6	20	5	2
Michigan	5	7	6	6	6	Washington	6	12	6	6	3
Minnesota	7	10	10	6	6	W. Virginia	6	6	10	10	3
Mississippi	6	10	7	6	3	Wisconsin	6	10	20	6	6
Missouri	6	8	10	10	5	Wyoming	8	12	5	5	8

*Under seal 10. †No law. ‡Negotiable notes 6; non-negotiable, 17. –Varies by counties. ¶Real estate 20. ††Under seal 12. ‡‡Under seal 14.

Days of grace on notes and drafts are given in the following states and territories: Alabama, Arkansas, South Dakota, Georgia, Indian Territory, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Mexico, North Carolina, Oklahoma, South Carolina, Texas, and Wyoming.

Homestead Laws

Any person who is the head of a family, or who is 21 years old and is a citizen of the United States or has filed his declaration of intention to become such, and who is not the proprietor of more than 160 acres of land in any state or territory, is entitled to enter one-quarter section (160 acres) or less quantity of unappropriated public land under the homestead laws. The applicant must make affidavit that he is entitled to the privileges of the homestead act and that the entry is made for his exclusive use and for actual settlement and cultivation, and must pay the legal fee and that part of the commission required, as follows: Fee for 160 acres, $10; commission, $4 to $12. Fee for eighty acres, $5; commission, $2 to $6. Within six months from the date of entry the settler must take up his residence upon the land and cultivate the same for five years continuously. At the expiration of this period, or within two years thereafter, proof of residence and cultivation must be established by four witnesses. The proof of settlement, with the certificate of the register of the land office, is forwarded to the general land office at Washington, from which a patent is issued. Final proof cannot be made until the expiration of five years from date of entry, and must be made within seven years. The government recognizes no sale of a homestead claim. After the expiration of fourteen months from date of entry the law allows the homesteader to secure title to the tract, if so desired, by paying for it in cash and making proof of settlement, residence, and cultivation for that period.

The law allows only one homestead privilege to any one person.

I H C Service Bureau

The International Harvester Company of America organized the I H C Service Bureau in August, 1910. As previously announced, the purpose of this Bureau is to supply authentic and accurate information to farmers, schools, and the public generally, with a view to improving American agricultural methods.

The I H C Service Bureau was established :

To help the farmers and others interested in agriculture, fruit raising, gardening, and animal husbandry.

To answer their questions and assist them in solving their problems.

To carry on experiments and make investigations into agricultural conditions both general and local.

To furnish free to everybody the latest and most accurate information on soils, fertilizers, rotation of crops, climatic conditions, insect pests, irrigation, care and use of farm machines, spraying, etc.

The Bureau co-operates with the United States Department of Agriculture, the Government Experiment Stations, State Agricultural Colleges, and other authorities.

Articles are prepared for the press, and facts, figures, and photographs furnished to those who have need for them.

Lantern slides illustrating agricultural progress are loaned to schools, colleges, and other institutions offering lectures on the subject.

Only within recent years has the farmer come to realize the vital importance of acquiring a thorough knowledge concerning the business of farming. What began in the outset as an imperfect attempt at more advanced methods of farming has come to be intensified farming, which means the adaptation of crops to soil, climatic, and market conditions, so as to insure the largest possible returns per acre.

There recently died in Missouri a farmer who had never engaged in any other occupation, but because of his skill and the intelligent and progressive methods which he employed, he left an estate valued at $4,000,000 after having given quite as much during his lifetime to educational and charitable purposes.

The time is rapidly approaching when the farmer, instead of eking out a bare existence from his acres, will on a small area of land be able to enjoy the comforts and luxuries of life, as well as its necessities, and at the same time develop within himself the best qualities of American citizenship.

The high level of general intelligence and educational standards which the rural population of the United States has attained during the last two decades has been remarkable, though it is as yet only beginning to get under way.

Every such forward movement as that undertaken by the I H C Service Bureau is another step in the right direction. Since the Bureau was established many thousands of inquiries have been answered, and any complaints relative to the work of the Bureau have been by those who failed to sign their inquiries or whose signatures could not be deciphered. We therefore urge upon every one the importance of signing inquiries with the full name and address, plainly written, in order that replies can be sent forward promptly.

CALENDAR FOR 1912

JANUARY.

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....
....	....	....	....	....	....	....

FEBRUARY.

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	....	....
....	....	....	....	....	....	....

MARCH.

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	....	....	....	....	....	....

APRIL.

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	....	....	....	....
....	....	....	....	....	....	....

MAY.

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	....
....	....	....	....	....	....	....

JUNE.

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	....	....	....	....	....	....

JULY.

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....
....	....	....	....	....	....	....

AUGUST.

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
....	....	....	....	....	....	....

SEPTEMBER.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	....	....	....	....	....
....	....	....	....	....	....	....

OCTOBER.

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	....	....
....	....	....	....	....	....	....

NOVEMBER.

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
....	....	....	....	....	....	....

DECEMBER.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	....	....	....	....
....	....	....	....	....	....	....

CALENDAR FOR 1913

JANUARY.

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	....
....	....	....	....	....	....	....

FEBRUARY.

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	....
....	....	....	....	....	....	....

MARCH.

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	....	....	....	....	....

APRIL.

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	....	....	....
....	....	....	....	....	....	....

MAY.

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
....	....	....	....	....	....	....

JUNE.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	....	....	....	....	....
....	....	....	....	....	....	....

JULY.

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	....	....
....	....	....	....	....	....	....

AUGUST.

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	....	....	....	....	....	....

SEPTEMBER.

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	....	....	....	....
....	....	....	....	....	....	....

OCTOBER.

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	....
....	....	....	....	....	....	....

NOVEMBER.

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	....	....	....	....	....	....

DECEMBER.

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....
....	....	....	....	....	....	....